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# CONSTRAINTS ON BREASTFEEDING CHOICES FOR LOW INCOME MOTHERS

A Dissertation submitted in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy at Virginia Commonwealth University.

by

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May 2007

In loving memory of my mother,

Pearl Sensenig Mast Hurst

(1936-1994)

Who taught me that the work of mothering is worthwhile,

and

with loving appreciation to my father,

Dr. Luke Rhodes Hurst

who taught me to risk trying,

to “put my hand to the plow” and not turn back

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## Abstract

### CONSTRAINTS ON BREASTFEEDING CHOICES FOR LOW-INCOME MOTHERS

By Carol Grace Hurst, PhD Candidate

A Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 2007

Major Director: Dr. Ann M. Nichols-Casebolt  
Professor, School of Social Work

The choice to breastfeed a baby is a woman's concern with impact reaching beyond each individual mother and child to longer term health and mental health outcomes for society. The U.S. government has made increasing breastfeeding rates one of its major public health goals for 2010. Breastfeeding is a health disparity issue with mothers who are poor, young, less educated or Black less likely to breastfeed. This project examined impacts of sexual perceptions of breastfeeding, social support, and work on breastfeeding choices made by a sample of low income mothers.

A cross-sectional survey design was employed to examine potential barriers to breastfeeding experienced by a random sample of mothers served by the federal nutrition support program WIC (Women, Infants, and Children) in a geographically central region of Virginia. WIC is the federal nutrition support program for low income pregnant women, infants, and young children. A survey questionnaire was completed through structured interviews or mailed questionnaires with WIC participant mothers with a baby between 6 and 18 months of age. Both breastfeeding and formula feeding mothers were included in the sample.

One hundred and forty mothers identified their infant feeding choices in their babies' first six months. They answered questions about positive and negative breastfeeding experiences related to social support, work, and their attitudes regarding public breastfeeding and sexual perceptions of breastfeeding. The creation of a scale to measure sexual perceptions of breastfeeding is a primary contribution of the study. Social support, work, and sexual perception variables as well as demographic variables were used in logistic and linear regression models to explain mothers' breastfeeding initiation and breastfeeding duration choices. Further, mothers also expressed their perspectives on breastfeeding choices and experiences in their own words through open-ended questions in the survey/interview.

Results of the study found that social and professional support, discomfort with public breastfeeding, time spent away from baby for work, not being married or partnered, and possessing a lower level of education did constrain the initiation and/or duration of

breastfeeding for this low income sample of mothers. Qualitative data added description of mothers' experiences with these breastfeeding constraints.

## CHAPTER 1 Problem Statement

### Overview of the Research Problem

The choice to breastfeed a baby, or not, is a concern with impact reaching beyond each individual mother and child to longer term health and mental health outcomes for society. Recognizing this, the U.S. government has made increasing breastfeeding rates one of its major public health goals for 2010. However, as evidence mounts showing health benefits from breastfeeding (American Academy of Pediatrics, 2005; Lawrence, 1997, 2000), so too does the data indicating that mothers who are poor, young, less educated or Black are less likely to breastfeed (Abbott Labs, 2003; Li, et al, 2005). Given the health disparities the low income population already suffers in America, it is all the more important that low income persons have greater access to the health protective factors available through breastfeeding. This study will consider constraints on the choice to breastfeed for low income mothers.

For most of human history, a mother breastfed her child, found a substitute mother to breastfeed her child, or saw her baby die (Fildes, 1986). Improvements in infant formula made in the past century, freed society of a high infant mortality rate resulting largely from the failure to breastfeed and health complications resulting from other substitute infant foods (Wolf, 2003). Yet, the scientific community was fairly slow to wake up to the fact that supplanting the breast with the formula bottle was less than a

public health triumph. Although evidence for the health benefits of breastfeeding is compelling, it is proving to be a much more complicated matter to make breastfeeding once again the most commonsense choice of the majority of mothers.

The urgency of increasing breastfeeding rates in the United States is gaining attention. A proliferation of research studies confirm that mothers' milk is a living fluid unmatched by formula substitutes for babies' health (Lawrence, 1997; 2000). The significant health benefits of breastfeeding for women are also being established (Labbok, 1999; 2001). Some studies also focus on psychological benefits, associating breastfeeding with positive mother-infant attachment, and increases in self-esteem and felt success with mothering (Virden, 1988; Kennell & Klaus, 1998; Klaus & Kennel, 1976).

With such overwhelming benefits, one would assume that breastfeeding would be embraced by almost all mothers. However, recent data indicate that while 72.9% of all U.S. mothers may initiate breastfeeding, only 13.9% continue exclusive breastfeeding to six months (U.S. Department of Health & Human Services, 2006). Numbers are much lower for women who are poor, young, less educated, or black (Abbott Labs, 2003; Li, et al, 2005; U.S. Department of Health & Human Services, 2006). Clearly breastfeeding, a physiological behavior enacted within complex social, psychological, and cultural influences, does not easily follow the most scientifically supported information.

### Health Benefits of Breastfeeding

Over the last two decades a tremendous amount of medical research has accumulated supporting human milk as the gold standard of infant nutrition. Breast milk includes fatty acids, nutrients, and dynamic immunologic components. Breast milk

substitutes cannot adequately replicate breast milk as a food perfectly composed for human offspring. Studies have shown that breastfed infants have protection from a variety of diseases and infections including the common cold, ear infections, diarrhea, bacterial meningitis, and allergies (Lawrence, 1997, 2000; American Academy of Pediatrics, 1997; 2005). Breastfed babies have lowered risks of SIDS and post-neonatal mortality (Chen & Rogan, 2004). Children who were breastfed show lowered risks of asthma, cancer, diabetes, and childhood obesity (Ravelli, van der Meulen, Osmond, Barker & Bleker, 2000; Shu, et al, 1999). Even better eyesight (Uauy, Hoffman, Peirano, Birch & Birch, 2001) and higher intelligence have been linked with breastfeeding (Angelson, Vik, Jacobsen, & Bakketeig, 2001; Horwood & Ferguson, 1998; Morley, Cole, Powell & Lucas, 1988; Morrow-Tlucak, Haude & Ernhart, 1988; Mortensen, Michaelsen, Sanders, & Reinisch, 2002). There is a dose-response relationship between breastfeeding and health benefit (Raisler, Alexander, & O'Campo, 1999; Chen & Rogan, 2004). That is, the beneficial health outcomes found to be associated with breastfeeding increase the longer a baby continues to receive breast milk. Thus, some breastfeeding is good, but more is better!

Health benefits for mothers, although not as well known, are also substantial. Initially post-birth, breastfeeding is protective of postpartum bleeding (Chua, Arulkumaran & Lim, 1994). Breastfeeding assists with post-pregnancy weight loss. Longer term beneficial health outcomes include lowered risks of ovarian and breast cancer and osteoporosis in later life (Labbok, 1999, 2000; Melton, Bryant, Wahner, 1993; Newcomb, Storer, & Longnecker, 1994). Again, for mothers, there is a dose-response relationship

between breastfeeding and health. Research has corroborated that the health protective effects of breastfeeding increase with longer-term breastfeeding. The lack of or short durations of breastfeeding typical among U.S. mothers has been identified as a contributing factor to the high incidence of breast cancer (Collaborative Group, 2003).

#### Official Recommendations

Due to this growing body of empirical evidence, medical authorities now recognize the failure to breastfeed as a public health problem (Wolf, 2003). The United States Department of Health and Human Services' (2001) *Healthy People 2010* initiative sets a goal for 75% of mothers to initiate breastfeeding with 50% continuing for at least six months postpartum, and 25% continuing to one year. The American Academy of Pediatrics (2001; 2005) goes further with a recommendation that *all* infants be breastfed up to one year of age with continuation as long as the practice is “mutually agreeable to mother and child”. Furthermore, the American Academy of Pediatrics (2005) also urges *exclusive* breastfeeding for the first six months of life. Exclusive breastfeeding indicates feeding only breastmilk and/or prescribed vitamins and water without the use of supplemental formula or other supplemental foods.

While breastfeeding is considered the preferred way to feed a baby, there are times when it is contra-indicated. Mothers who have active untreated tuberculosis, who are positive for human T-cell lymphotropic virus, or are infected with human immunodeficiency virus (HIV) are currently advised not to breastfeed their infants (Gartner & Eidelman, 2005). Mothers receiving chemotherapy or radiation treatment or a small number of other medications should not breastfeed until such therapy is discontinued

and substances clear their milk (American Academy of Pediatrics Committee on Drugs, 2001). Mothers who are actively using street drugs should also not breastfeed until they have ceased use and the substances clear from their milk (Gartner & Eidelman, 2005). If a mother has another infectious disease or the baby has a genetic metabolic disease (Galactasemia) medical supervision is needed to determine the appropriateness of breastfeeding (Lawrence & Lawrence, 1999).

Breastfeeding promotion efforts have resulted in overall increases in U.S. breastfeeding rates since 2001. Progress made is depicted in Figure 1 in comparison to overall breastfeeding goals articulated in *Healthy People 2010*.

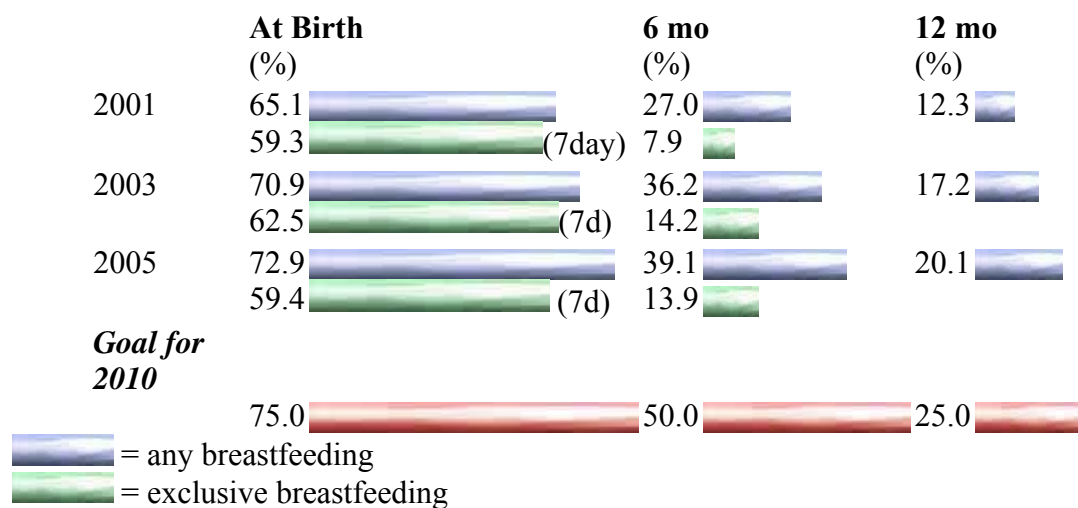


Figure 1. U.S. Breastfeeding Rates from the National Immunization Survey Compared to *Healthy People 2010* Breastfeeding Goals.

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2005 National Immunization Survey, US CDC, Department of Health & Human Services

2003 National Immunization Survey, US CDC, Department of Health & Human Services

Li R, Zhao Z, Mokdad A, Barker L, Grummer-Strawn L. (2003). Prevalence of breastfeeding in the United

States: the 2001 National Immunization Survey. *Pediatrics*, 111(5), 1198-201.

Significant disparity in breastfeeding rates exists between socio-economically advantaged and disadvantaged groups. Table 1 reports the most recently available national breastfeeding rates for different population groups. Younger, Black, low income, unmarried, and less educated mothers as well as mothers living with incomes < 100% of poverty rate and participants in the Women, Infants, & Children (WIC) program face steeper challenges in meeting the idealistic breastfeeding recommendations of the American Academy of Pediatrics or *Healthy People 2010* goals.

Table 1.

*Selected Groups Rates of Any Breastfeeding 2005*

Population Group	At Birth	At 6 Months	At 1 Year
All Infants	72.9	39.1	20.1
White	74.1	41.1	21.0
Black	55.4	24.8	11.9
Hispanic	79.0	42.0	22.0
WIC	65.8	30.3	15.7
< 100% poverty	63.5	29.7	16.7
< 20 years	50.0	14.8	5.4
High School grad	64.8	29.3	14.9
College grad	84.5	52.9	26.6
Unmarried	60.3	25.0	11.6

*Source: 2005 National Immunization Survey, CDC, U.S. Department of Health & Human Services, 2006*

Low-income women have expressed a perception of breastfeeding as a privilege of mothers who can afford to stay home with their babies (Guttman & Zimmerman, 2000). Feminist Linda Blum (1993) heralds breastfeeding as a “mother’s right” recognizing that for those who choose it breastfeeding can be opportunity for “deeply satisfying, intense engagement with and delight in one’s child” (p. 300). As mothers who are poor, young, less educated, Black, or single apparently encounter more barriers in claiming this “mothers’ right”, a social justice issue arises. Non-breastfeeding mothers and their children are indeed deprived of very substantial health benefits. With more than one out of four children born to mothers living below the poverty line (Bennett, 2004), it is important to understand what constrains low income mothers in making the choice to breastfeed and when chosen from continuing the practice.

### Significance in Social Work

The field of social work values social justice and has a history of working to improve the situation of low income persons. Breastfeeding rates show that low income mothers are less likely to breastfeed. Constraints on the breastfeeding choices of low income mothers are therefore a topic worthy of social work attention. While little attention has been paid to breastfeeding within contemporary social work, the concern is not without precedent. Indeed, maternal and child health were priority concerns of the profession’s earliest leaders. Julia Lathrop, member of Hull House and the first woman to head a

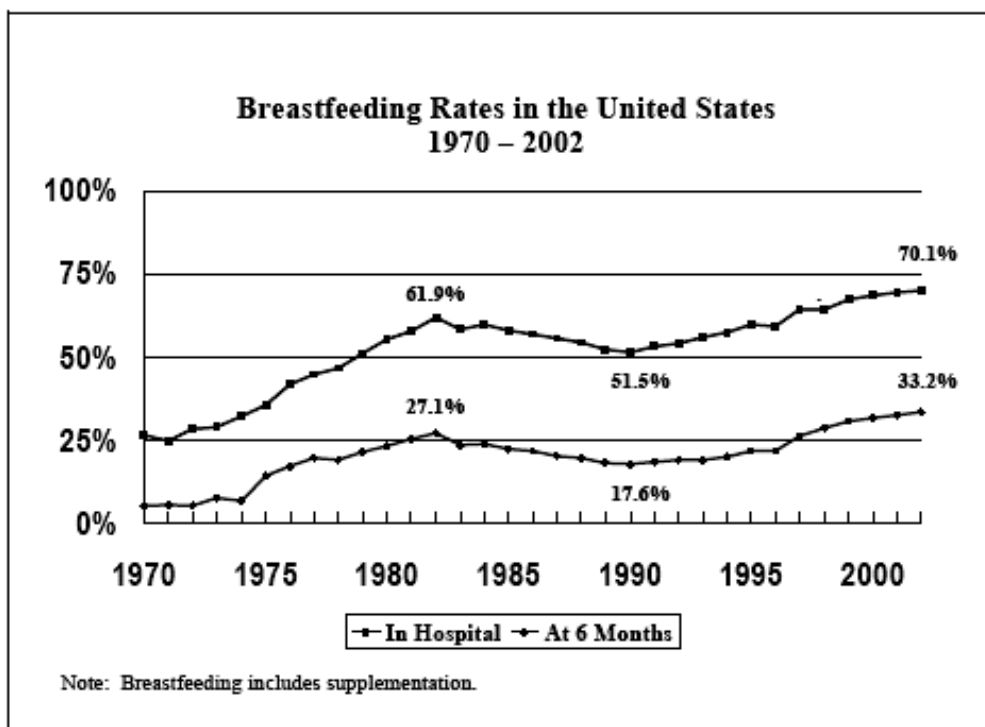
federal agency, the Children's Bureau, said "the first and simplest duty of women is to safeguard the lives of mothers and babies..." (Ladd-Taylor, 1994, p.80).

Lathrop and other settlement house social workers joined forces with physicians and public health nurses in what came to be called the "milk crusades" (Ladd-Taylor, 1994; Wolf, 2003). Spurred by an American infant mortality rate of nearly 1 in 5 babies born in 1900 (Preston & Haines, 1991, p. 3), crusaders urged mothers to breastfeed and avoid feeding their babies contaminated cows' milk. Home visiting efforts in several cities prompted documented increases in breastfeeding rates with concomitant decreases in infant mortality (Wolf, 2003).

By the late 1920s, with the passage of mandatory pasteurization laws and more widespread use of refrigeration, urban breastfeeding campaigns lost steam. However, doctors struggling to find methods to save premature babies with human milk were again assisted by social workers. Social workers became involved in recruiting wet nurses and helping establish milk banks. Medical social workers enlisted resident wet nurses to provide breast milk for premature babies in Boston, Detroit, New York, and Pittsburgh hospitals (Golden, 1996, p. 195-196). Case workers also played key roles in teaching mothering skills and helping the mostly poor, young, single mothers become economically self-sufficient through their breast milk savings and additional job training (Golden, 1996, p. 188). Human milk banking replaced hospital based wet nursing by the 1930s. The country's fledgling milk banks were established either in hospitals or child welfare organizations (Ladd-Taylor, 1994; Tobey, 1929).

Breastfeeding never was established as a lynchpin of preventive medicine as advocated by the early 20<sup>th</sup> century physicians who had witnessed the infant death epidemics (Wolf, 2003). Instead, people came to believe in the innocuousness of pasteurized cows' milk and the slickly marketed infant formulas. Breastfeeding rates plummeted to a nadir of 24% of U.S. mothers initiating breastfeeding in 1971 (Abbott Labs, 2003). From here a breastfeeding resurgence began. While currently on the increase, breastfeeding initiation and duration rates have gained and declined unpredictably. The chart below provides depiction of these changes.

Figure 2.



Source: Ross Mothers' Survey. Abbott Laboratories, 2003

Today, the medical community again recognizes what was so obvious a century ago. The failure to breastfeed is a public health problem (Wolf, 2003). It is a problem that once again merits social work attention.

### Feminism and Breastfeeding

The resurgence of breastfeeding in the 1970s occurred along with the feminist women's health reform movement. The maternalist breastfeeding organization La Leche League International also played a role in changing social views of breastfeeding. Feminist views of breastfeeding and mothering are not without controversy and ambivalence (Esterik, 1989). Feminist understandings have added a great deal to scholarship concerning the politics of women's bodies and the reproductive experience in general (Eisenstein, 1988, Kitzinger, 1978; Martin, 1987; Rothman, 1989). Breastfeeding, with its ability to bring up archetypal images of mothering like the Madonna and child, received much less attention for many years (Esterik, 1989; Stearns, 1999; Wall, 2001). This neglect is noteworthy. Arguably, ambivalence regarding how to mother in an empowered fashion played a role.

La Leche League, born in Illinois in the 1950's through the efforts of seven founding mothers, maintains a particular vision of empowered mothering through breastfeeding. The founders met through their shared Catholic backgrounds and desire to successfully breastfeed their children in an overwhelmingly bottle feeding culture (Ward, 2000). Their organization grew with mottos of "good mothering through breastfeeding" and "people before things" (Gorham & Kellner-Andrews, 1990). The seven founders together wrote the book *The Womanly Art of Breastfeeding*. This premier breastfeeding

how to book has been a resource manual for more than two million mothers (Torgus & Gotsch, 2004). The seventh edition was published in 2004. La Leche League represents a maternalist philosophy that has empowered many women to see their bodies and breasts as more than sexually defined, even while at the same time valorizing the traditional role of women as mothers in the home (Esterik, 1989).

La Leche League has been called the second largest self-help group in the United States (Bobel, 2001). Through a network of volunteer leaders and monthly group support meetings, as well as a national organizational headquarters with an impressive library and phone support capacities, the league supports thousands of mothers monthly with breastfeeding help, advice, and solidarity (Blum, 1999; Bobel, 2001; La Leche League International, 2007). The league has grown to include some three thousand groups in fifty countries (Torgus & Gotsch, 2004). The league has had an effective, helpful, though strangely politically quiet presence, of community support for breastfeeding and mothering.

As a predominantly white, middle class group of mothers with husbands and homes La Leche League does not represent all mothers in the United States (Blum, 1999). Furthermore, their ideology of exclusive, most often at-home motherhood, presents a different kind of limit on women's lives (Bobel, 2001; Esterik, 1989; Gorham & Kellner-Andrews, 1990). Many mothers within the organization would not identify themselves as feminists; although some do (Blum, 1999; Ward, 2000). Their organization embodies what poet Adrienne Rich (1976) said of mothering "motherhood as an institution represents patriarchal entrapment, as lived experience it has liberatory qualities (p. 54)."

Feminist thinkers have paid homage to retaining the empowering parts of motherhood (Chodorow, 1978; Rich, 1976; Ruddick, 1994). Yet, motherhood also brings up concerns over traditional gender roles and the bondage women are often caught in as mothers, which frustrate attempts to achieve political and economic equality with men (Esterik, 1989; Smith & Ingham, 2005). The tension between equality and difference for women is especially difficult with breastfeeding. Only women can breastfeed. In order to breastfeed exclusively and on a longer-term basis, a woman is tied to her child, constraining the choices she can make and the time she can spend apart from her child.

Breastfeeding throws a wrench in the equal treatment approach for seeking workplace equality (Galtry, 2000). Breastfeeding workers often need special accommodations to persevere in breastfeeding. Further, breastfeeding is more unpaid mother work not counted in the wage economy (Smith & Ingham, 2005). Women who take extended breaks from the labor force to care for children earn less over their lifetimes, have smaller or no retirement savings, and are more likely to end up impoverished (Gallant, 2002).

Some feminists saw freedom for women in the promise of reproductive technology and more sex equitable distribution of child rearing tasks (Esterik, 1989). Bottle feeding allows fathers to step up to primary infant care roles. Simone de Beauvoir (1949) actually argued that the primary responsibility for raising children should fall on the state, not the parents. Shulamith Firestone (1970) suggested artificial wombs should replace the need for women to carry new life. As the bottle supplanted the breast as the most common source of infant nourishment, it is not hard to see why many women may have felt

liberated. Other feminists who have analyzed breastfeeding phenomena (Bartlett, 2002; Blum, 1993, 1999; Carter, 1995; Kahn, 1989; McKinley & Hyde, 2004; Stearns, 1999; Wall, 2001; Young, 1998) have articulated both empowering and troubling aspects of mothers' breastfeeding experience.

Kahn (1989) points out that feminist critiques of patriarchal institutions and structures of meaning need to advocate for the *expression* of childbearing potentials not only their *suppression* through access to birth control and abortion (p. 91). Similarly, McKinley and Hyde (2004) suggest that breastfeeding is a reproductive rights issue, not just a childcare concern. Women may choose for their own reasons to suppress uniquely female biological potentials or to express them through pregnancy, childbirth, and *breastfeeding*.

Stearns (1999) suggested that "to the extent that breastfeeding occurs in the presence of others and/or symbolizes good mothering, it is a visual performance of mothering with the maternal body at center stage" (p.309). The act of breastfeeding can raise ambivalence regarding the appropriate use of women's bodies for sexual or nurturing purposes. Young (1998) theorized that breastfeeding and "breasts are a scandal because they shatter the border between motherhood and sexuality" (p. 132-33). Given the charged sexual connotations commonly attached to breasts, and a nursing infant's need for milk approximately every 2-4 hours, most breastfeeding women need to cross a cultural convention to bare the breast in some public spaces.

Carter (1995) and Wall (2001) use Foucault-ian deconstruction to analyze power dynamics in the discourse promoting breastfeeding. Moral and medical messages about

“good mothering” are communicated in pamphlets that encourage breastfeeding. Most breastfeeding promotion carries a clear message that “breast is best” with a meta-message that women need to be taught how to breastfeed by medical experts. These prescriptive messages promoting breastfeeding as good mothering may be experienced as oppressive to mothers who lack the information, income, social support or inclination to enact this role (Guttman & Zimmerman, 2000).

Bartlett (2002) finds breastfeeding pedagogy by experts who may not have ever breastfed themselves to be disempowering at a time when the body is very active. She suggests that breastfeeding may be looked on as a kind of bodily intelligence where the wisdom of the body deserves respect. Indeed, body knowledge, including breastfeeding technique, may be a good example of Foucault’s concept of subjugated knowledge (Foucault, 1980; p 80). As fewer American women tended to breastfeed there was a progressive loss of breastfeeding wisdom within the culture. A daughter could not turn to her mother for guidance on the intricacies of learning to breastfeed if the mother herself had never breastfed. Many women who are reclaiming breastfeeding need to follow the experience of their bodies as they discover the experience for themselves.

Blum (1993) identifies breastfeeding as a useful site of analysis where paradox regarding constructions and experiences of mothering can be found. Breastfeeding expectations “up the ante for women already stretched thin, already guilt-ridden” (p. 306). Indeed, cultural ideals, family needs, and welfare reform dictates conspire to push lower income women to keep working (Haider, Jacknowitz, & Schoeni, 2003). The additional

expectation to somehow provide breast milk for their babies as well may feel an unachievable ideal for many women.

Blum (1993) also speaks of the pleasure breastfeeding offers women as “a sensuous, non-commodified body experience” (p. 297). After acknowledging the many challenges a breastfeeding mother faces, Blum (1993, 1999) holds a feminist preference for breastfeeding as a woman’s right. She bases her choice not on the nutritional superiority of breast milk for baby, or the health benefits for mothers, but rather on the hope of building a transformed social context for mothering, “one in which the pleasurable physical and emotional aspects (of breastfeeding) can be widely available, genuine choices for women” (1993, p. 306). The differential rates of breastfeeding in the United States show us that lower income mothers face more challenges in claiming this “right”.

Mimi Abramovitz (1988) in her historical analysis of social welfare policies argues that government policies of the welfare state have always regulated the lives and options of poor and working class women. Poor women are often viewed as deserving or undeserving based on their compliance with culturally communicated work and family ethics. The imperative to breastfeed to be a good mother may, ironically, lead to surprise that negatively viewed “undeserving” poor mothers may also desire to implement breastfeeding, a behavior symbolic of “good” mothering. The needs of breastfeeding mothers for large part were not factored into welfare reform policies, and have resulted in reduced breastfeeding among poor women (Haider, Jacknowitz, & Schoeni, 2003).

Greater understanding of the constraints low income mothers encounter in choosing to breastfeed is needed. Many existing studies of breastfeeding constraints have been

completed with mothers of higher socio-economic status. Other studies of cultural and sexual breastfeeding attitudes have been completed with general populations identifying hypothetical beliefs rather than populations of actual mothers making real decisions. This study was warranted as an investigation of the impact of breastfeeding barriers on the actual breastfeeding choices of a low-income group of mothers.

### Overview of the Study

This research examined breastfeeding constraints felt by a random sample of mothers served by the WIC (Women, Infants, and Children) program in a central region of Virginia. WIC is the federal nutrition support program for low income pregnant women, infants, and young children. By definition, families are eligible for WIC services if they meet 185% of the U.S. poverty rate (Besharov & Germanis, 1999). Program participants include recipients of public assistance programs like Food stamps, Medicaid, and TANF who automatically meet the program's income limits. The population also includes low income mothers of higher though still modest income.

Felt constraints on breastfeeding choices were investigated using a cross-sectional survey design. A survey questionnaire was completed through surveys or structured interviews with WIC participant mothers with a baby between 6 and 18 months of age. Both breastfeeding and formula feeding mothers were included in the sample. The research plan was informed by lessons learned in a pilot study completed by the researcher at one Virginia WIC clinic location in 2003-2004.

Three main constraining factors on low income breastfeeding choice were considered in the research. These factors included: lack of social support, the need to work, and discomfort with sexual perceptions linked with breastfeeding.

Three main hypotheses were investigated. Hypothesis 1: Mothers who perceive higher levels of social support for breastfeeding will have higher breastfeeding initiation and duration rates. Hypothesis 2: Mothers with higher perceived sexual perceptions of breastfeeding will have lower breastfeeding initiation and duration rates. Hypothesis 3: Mothers who need to spend greater time apart from their infants (with shorter maternity leaves, and greater number of hours spent at work or school) will have lower breastfeeding initiation and duration rates.

The first step in knowing how to remedy low breastfeeding rates is greater understanding of the barriers mothers face in choosing breastfeeding. Mothers themselves are our best source of knowledge on breastfeeding perceptions and experiences. A survey of low income mothers who have had the experience of making decisions about breastfeeding lends valuable insights for breastfeeding support. Discovery of the factors that help these mothers choose and continue breastfeeding will build knowledge for use in the public health effort promoting breastfeeding.

Chapter two will discuss theory for understanding breastfeeding phenomena followed by a review of the existing literature on breastfeeding barriers and low income mothers. Chapter three presents methods used for implementation of the study. Chapter four presents study results. Chapter five discusses implications of the study for addressing breastfeeding constraints for low-income mothers.

## CHAPTER 2 Theoretical Viewpoints and Literature Review

### Chapter Organization

A feminist values perspective undergirded this project. The theoretical framework for the inquiry was based on two theories: socialist feminism and symbolic interaction. Socialist feminism was chosen for its utility in helping identify what may explain aspects of breastfeeding phenomena at both macro and micro social levels. Symbolic interaction was chosen because it describes how humans perceive, choose lines of action, and make sense of their social worlds. Socialist Feminism is a useful lens for considering the social and institutional structures that shape, mold, and influence the choices that women have in their lives. Symbolic interactionism is a useful lens for understanding an inner process of choice and meaning making in an interactive social field.

This chapter begins with a discussion of the epistemological views of the researcher related to the use of theory. A brief overall description of feminist theory will then be provided. Presentation of the tenets of the two chosen theories will follow. Application of both theories to the phenomena under study is detailed. The second half of the chapter will present and discuss the scholarly literature pertinent to breastfeeding barriers and low-income mothers. Empirical investigations of breastfeeding that inform the current study's approach are reviewed.

### Epistemological Grounding

Theory, in social science, can be likened to prisms through which to view a phenomena of interest. Particular theories shine their light differentially, guiding our attention and concern to different aspects of the complex social world. Levy Simon (1996) identifies that theory helps us sort through masses of data and stimuli, to focus on what is important. Theory also gives us a language to talk and communicate concerning the phenomena.

In his book on modern social work theory, Payne (1997) writes that the profession has no consensus on what “theory” is. Social work has experienced debates between different epistemological positions, a positivist position and a more postmodern position. The positivist view argues that a “theory” is a general statement about the real world whose essential truth can be supported by evidence obtained in a systematic and rigorous way. This view sees theory as explanatory, accounting for why a particular action results in particular consequences and when it does so. A provable causal narrative is established.

Payne (1997) argues that a postmodern definition of “theory” broadens theory’s meaning to include models and perspectives, as well as positivistic explanatory theories. According to this view, *models* describe in a general way. Certain principles and patterns are observed to apply in most situations. *Models* are practical because they give coherence to our thinking for most situations, even without the intention to prove that they apply to *all* situations. The epistemological assumptions do not purport to capture a fixed truth. *Perspectives*, additionally, express values or a worldview regarding human action. A perspective supplies a frame for thinking about human complexity from a values

standpoint. Theory presented as a lens for this inquiry, should be understood as applicable according to Payne's (1997) broader definition of theory.

The epistemological ground of this inquiry can be likened to music theory's relationship to music. Music theory uses notes (symbols), puts them together in chords with different rhythms to explore different musical ideas. Some musical ideas become melodies, harmonies, dissonance, and improvisation on a theme as the musician plays with the music from song to song. Yet, the music theory is not the music. Indeed, music theory pales in comparison to the rich cacophony of the actual experience of the music. However, music theory provides a way to describe the music and gain insight into how the music operates and might continue to operate. The theory provides the musician with the scaffolding for writing new songs, and a language for explaining why some songs sound one way and others work differently. So too, in Social Work, our theory is not the reality of our world. Rather, the theory provides a prism through which we view portions of the social world. The lens used helps us describe and understand what we see giving us insight into what might happen next and how we might enter into the world to change and improve the human condition.

Another lens to understanding the world is our own experience. Dorothy Smith (1986; 1999) encourages scholars to be aware of their own situations as entry points for their thinking. She calls this awareness of *standpoint*. Personal experience is perceived as a window into knowledge, a grounding for knowledge, and an accountability point for knowledge. This contrasts with seeing personal experience and private life as a contaminant to scholarship. Smith (1990) believes we cannot avoid being situated so we

should take our situation as our starting point for knowledge building. Smith advocates that researchers strive to build knowledge that is situated, reflexive, embodied and relational.

My own personal, positive experience of breastfeeding my three sons led to my scholarly interest in breastfeeding phenomena. Competence as a breastfeeding mother grounds my knowledge building in this area. I know both the delight and the exhaustion of enacting the behavior which increases my critical consciousness. Smith cautions that while everyday experience is a “point of entry” for knowledge building personal situation should not be taken for granted. The researcher should be aware of it, communicate it, problematize it, and be reflexive about it. For example, I hold a view of breastfeeding as an empowering experience for women. Reflexive criticality of my own standpoint and its impact on this inquiry was necessary. Many of the research participants experienced breastfeeding as a less than empowering experience. Recognizing that knowledge is relational, I was wary as I communicated with formula feeding mothers around their perceptions and beliefs about their own experiences. As Smith (1987) explains "We must remember that as we begin from the world as we actually experience it we are located. What we know of the world, of the 'other,' is conditional upon that location and part of comprehending the other's location also" (p. 93).

### Feminist Theory

Feminist theory includes a wide range of ideas about social life and human experience developed from a woman centered perspective. Feminist theory is not one unified theory. Rather, feminist theories are the work of a multi-disciplinary group of

scholars who have developed different strands of feminism (Lengermann & Neibrugge-Brantley, 2000). Feminist theory can be viewed, according to Payne's (1997) theory definition as a perspective unified by a particular value based world view.

Feminist theory starts with the experiences of women in society and follows through with them as the central subjects of investigation. A female vantage point is integral. Feminist theory is critical and activist, seeking to bring greater power and possibility to women and in so doing improve social life for everyone (Lengermann & Neibrugge-Brantley, 2000). The poetic words of Native American (Ojibway) feminist Mary Gopher illustrate: "We look to this planet as a woman. She is the most important female to us because she keeps us alive. We are nursing off of her" (Udel, 2001). In native spirituality women's authority as procreators is linked to a responsibility to nurture and protect an endangered earth for the good of the whole community of earth's citizens. Such a values orientation is inspiring. This inquiry of breastfeeding sought to emulate this maternal ethic. Women are the informants regarding a primary woman's activity that has implications for the overall health of society.

### Socialist Feminism

Socialist feminism is a specific strand of feminism I used as an inquiry lens in this project. Socialist feminism brings together materialist class analyses and feminist social protest to explain women's *oppression*. Women's situations in society are seen as not just different from or unequal to that of men. They are viewed as actively restrained and subordinated to that of men (Lengermann & Niebrugge-Brantley, 2000). While socialist feminism borrows from Marxism, the theory moves further than Marxism into subjectively

experienced micro realities to more fully explain women's oppression. Hartman (1979) identified an "unhappy marriage between Marxism and feminism". Marxists base analysis of oppression in the class relations of capitalism, turning patriarchy into a function of economic relations. Socialist feminism makes a more radical argument holding that although patriarchy influences economic conditions, patriarchy is an independent structure of oppression (Lengermann & Neibrugge-Brantley, 2000). Socialist feminism coins the term *capitalist patriarchy* to more aptly describe the dual structural oppressions operant in women's lives (Eisenstein, 1979).

Women's labor as mothers and within the home has often been invisible in Marxist analyses. Within capitalism, domestic and reproductive labor is given no exchange value and not regulated through market mechanisms (Smith & Ingham, 2005). Therefore, it does not appear to form part of the capitalist mode of production. Socialist feminism argues that the economically invisible labor of women subsidizes the economy by disguising real costs. On the other hand, socialist feminist analysis identifies that women as primary consumers of goods and services for the household become a major source of capitalist profit (Hennessey & Ingraham, 1997).

Both these insights are applicable to potential breastfeeding barriers. Breastfeeding is a form of domestic labor that costs mothers' time and energy without producing income. Particularly for low-income mothers who are often overwhelmed already with multiple hassles (Wjinberg & Reding, 1999), breastfeeding may be perceived as an inconvenience too costly to choose. Mothers who do not breastfeed must buy formula, representing a large, sought after, capitalist market. The intensive formula marketing that mothers are

exposed to may be another breastfeeding deterrent. Some breastfeeding advocates feel that inappropriate marketing of formula is one of the biggest barriers to successful breastfeeding (Bentley, Dee, & Jensen, 2003; Newman & Pittman, 2000). A randomized, controlled study of the impact of formula advertising in doctors' offices found that prenatal exposure to such marketing significantly increased early termination of breastfeeding (Howard, et al, 2000).

Breastfeeding in a capitalist patriarchy has far-reaching macro level economic and political impact. The baby formula industry has been estimated to generate between 5 and 6 billion in profits annually (Tamaro, 1998). These powerful companies have an economic interest in continued low breastfeeding rates. Tension characterizes the relationship between the formula companies and breastfeeding advocates. The multinational Nestle Corporation was subjected to boycott of their products in the late seventies and eighties due to marketing of baby formula in developing countries. In response, the World Health Assembly passed an international code of marketing breast milk substitutes in 1981 (Esterik, 1989). After wrangling over code details, a proposal to include health warning labels similar to surgeon general's warnings on cigarettes was defeated (Coburn, 2000). Strict advertising restrictions and prohibition of free samples to mothers were included (WHO/UNICEF, 1981). However, without a way to effectively sanction the companies for violations, the code turned out to be toothless (Coburn, 2000). Widespread direct marketing of formula to mothers continues (Reed & Pitman, 2000). A mother who purchases breast pads for leaking breasts may even find coupons for formula in the box (Coburn, 2000). The above example illustrates the power of the capitalist profit motive in

influencing mothers' infant feeding choices. Even a well-meaning intent to breastfeed may be undermined by such tactics.

Most women who birth their babies in U.S. hospitals receive gift packs of diaper bags and baby paraphernalia including free formula samples provided by formula producers. The United Nations Baby-Friendly hospital initiative certifies hospitals worldwide for implementing the ten Baby-Friendly steps within their institutions that are supportive rather than undermining of breastfeeding. Relatively few institutions in the United States have pursued the designation; only 29 U.S. hospitals had achieved and retained the distinction as of 2003 (Merewood, et al, 2005). The steps require major procedural changes from the hospitals including receiving no free formula and gifts from the formula companies. Baby-Friendly designated hospitals do have elevated rates of breastfeeding as compared to their non-designated counterparts. The mean breastfeeding initiation rate for the U.S. Baby-Friendly institutions in 2001 was 83.8% as compared to the country's overall mean breastfeeding initiation rate of 69.5% (Merewood, et al, 2005).

Formula companies do continue to advocate for their financial interests. Companies attempted to weaken strong breastfeeding recommendations from the World Health Organization (Esterik, 1989). More recently, a U.S. Department of Health and Human Services' breastfeeding awareness campaign was delayed and changed due to lobbying efforts by formula companies (Peterson, 2003).

Sociologist and socialist feminist theorist, Dorothy Smith (1986) wrote that social science "obfuscates rather than clarifies" when explanation remains at a macro-structural level without attention to the everyday lived experiences of life. The everyday is

intertwined with the structures that produce economic goods. Socialist feminism is concerned with women's experience of domesticity, reproduction, relationships, and sexuality. Subjective human factors are as important as economic structures in determining oppression. The popular culture feminist adage "the personal is political" captures the essence of this point. From a socialist feminist perspective societal structures including economy, politics, ideology, and religion interact with the intimate private domains to maintain the multifaceted oppressive system of capitalist patriarchy.

Breastfeeding is tied intimately to micro structures of daily life including: the human body, its sexuality and involvement in childbearing; home maintenance, with its unpaid, invisible domestic tasks; and emotional sustenance of self and others (Lengermann & Neibrugge-Brantley, 2000). These life-sustaining activities can be organized unequally, and very often are shouldered more by women than men. Gender specific roles and an ideology of woman's place in the home tend to maintain patriarchal interests. Abramovitz (1988) identifies the assignment of homemaking and childcare responsibility to women as the lynchpin of the family ethic (p. 37). She maintains that this division of labor has remained reasonably stable over time.

Socialist feminism encourages a value of equity in family roles. Whether breastfeeding becomes part of the exploitation of women within the family is influenced by multiple subtleties in the balance of power within particular partnerships. Often, more domestic work needs to go to a partner of a breastfeeding woman because the mother is the only one who can sit down to nurse the crying baby. In partnerships with traditional male-female divisions of labor where little domestic household labor is shared, a breastfeeding

woman may easily be overwhelmed (Sullivan, Leathers, & Kelley, 2004). Single mothers parenting alone carry the entire load of domesticity and income earning (Bick, Macarthur & Lancashire, 1998). Fatigue with the energy demands required of breastfeeding in addition to domestic and workforce labor may partly explain low breastfeeding rates.

Breastfeeding in a capitalist patriarchy raises other micro level implications that may be quite difficult for many women. Breasts are highly sexualized in this culture (Bentley, Dee, & Jensen, 2003; Palmer, 1995). Breastfeeding establishes the breast as a vehicle of nurture beyond sex. Even if the woman herself becomes comfortable with her breastfeeding body, public breastfeeding subjects the mother to others' ambivalence about the act (Stearns, 1999). Even when partners, grandparents, and friends provide support for the normalcy of breastfeeding, strangers may be shocked.

Open breastfeeding, especially of older babies, is not yet a well accepted cultural norm in the United States (Stearns, 1999). Some women have been charged with indecent exposure for nursing their children in public (Palazzo, 2001). Partly in response to such incidents, many states have passed legislation regarding breastfeeding. Some states have laws specifying that mothers are permitted to breastfeed in any public or private place where the mother is otherwise entitled to be. Some states have exempted breastfeeding from public indecency laws. Some states exempt breastfeeding mothers from jury duty. State laws regarding breastfeeding and the workplace are being proposed in many jurisdictions (Weimer, 2003). New York Democratic Representative Carolyn Maloney (2007) successfully championed legislation in the 107<sup>th</sup> Congress making it legal for a mother to breastfeed anywhere on federal property she has a right to be. She also

continues to champion legislation that would amend the *Civil Rights Act* of 1964 and the *Pregnancy Discrimination Act* of 1978 to protect breastfeeding.

The patchwork of existing breastfeeding laws does not fully remedy U.S. cultural ambivalence regarding breastfeeding. Networks of women have turned out, nursing children in tow, for “nurse-ins” to protest incidences of nursing mothers being asked to leave restaurants and buses (Chong, 2004; Kang, 2006; Stuart, 2004). Feeling uncomfortable with breastfeeding in front of others may be a significant barrier to initiation and duration of breastfeeding.

### Symbolic Interactionism

While socialist feminist theory provides a framework for considering structural deterrents to breastfeeding, symbolic interactionism provides a theory for considering the subjective inner process mothers use in making their choices and deciding on the significance of their actions. Symbolic Interactionism provides a lens for considering the personal and interpersonal attitude deterrents to breastfeeding. Karp and Yoels (1993) define symbolic interactionism as “a theoretical perspective in sociology that focuses attention on the processes through which persons interpret and give meanings to the objects, events, and situations that make up their social worlds” (p.31).

Symbolic interactionist ideas were ignited at the University of Chicago in the beginning of the twentieth century. At that time, Chicago settlement house social workers partnered with social philosopher John Dewey and sociologist George Herbert Mead in thinking about pragmatic responses to social problems (Forte, 2004). In 1917, Mead and Dewey marched down Chicago’s Michigan Avenue with Jane Addams in support of

suffrage for women. Mead supported the work of his friend Jane Addams. In turn, her work influenced Mead's intellectual theorizing (Forte, 2004).

In *Mind, Self, and Society* (1934) Mead explicated the central constructs of symbolic interactionism. Rather than viewing behavior as a product of conditioning and social reinforcement, Mead believed that the mind is the most important consideration in attempting to understand human behavior.

Through *mind* humans have three species specific abilities. First, mind gives people the ability to create symbols. Through language and reflection, people name and make judgments regarding objects, feelings, and behaviors in their environment and within themselves. Second, mind gives people an ability for *imaginative rehearsal*. People have internal conversations in their minds about what is going on, what they feel, and what they want to do. Third, mind gives people the ability to make choices about these feelings and behaviors that *give meaning* to the social world (Longres, 2000). A pregnant woman may imaginatively rehearse how she will feed her baby. And what people will think of her as a result. Her choice, as it is lived out, may become inscribed with personal meanings for her performance of the role of mother.

Bartlett (2002) considered breastfeeding following Elizabeth Grosz's (1994) formulation of a corporeal feminist theory that values the body itself over a separated and disembodied ability to think. As body wisdom may be a special kind of subjugated knowledge, I would like to suggest that symbolic interaction's concept of *mind* can include body knowledge to the extent that Mead's original concept includes the human ability to perceive emotional and physical experiences and ascribe meaning to them. Bartlett (2002)

suggests that breastfeeding physiology gives us an opportunity to consider the importance of the “operations of our own flesh, blood, cells, genes, and hormones” in our construction of knowledge (p. 374). Listening to the body’s lead in the experience of breastfeeding can be a part of Interactionism’s concept of *mind*.

Bartlett (2002) notes the unpredictable, often non-linear, nature of bodies and breastfeeding. Determined to breastfeed their babies, some women persevere valiantly through painful experiences because breastfeeding holds personal importance and significance beyond such discomfort (Cooke, Sheehan, & Schmied, 2003). Other mothers may accomplish breastfeeding as easily as ducks swim on water; their physical experience possibly providing a powerful symbolic reinforcement of an ability to mother. A mothers’ “let down reflex” may occur in response to a thought of her baby giving physical voice to an embodied connection between mother and child. An adoptive mother may discover milk spontaneously present in her breasts (Bartlett, 2002). Other adoptive mothers work diligently to physically stimulate an ability to breastfeed a baby they did not birth (Katz Rothman, 2000; Newman & Pittman, 2000; Petersen, 1999). In the mysterious unfolding of breastfeeding experience, bodies can “speak” intelligently, informing ongoing perceptions and choices regarding what is going on.

While mind is a human biological potential, it is not thought to exist outside of society. Mind produces human society but is in turn influenced and re-shaped by it. People symbolize, use language, and communicate through ongoing interactions in a complex dance of perceptions. Through this interaction the social system of norms, values, and social institutions are formed and re-formed. *Self* is created from the relation

of mind to society. A self-concept is derived from this ability to see one's behaviors from the point of view of others, and ultimately from the point of view of the standards of society. A self is chosen from imaginative rehearsals or meaningful lines of action that a person decides upon. Through this theory lens, mind, self, and society are processes. Social structures are not considered to be fixed. Rather, everything is in a state of motion, always emerging but never arriving (Longres, 2000).

The development of the self is central to symbolic interactionism. This happens as an individual imaginatively constructs the attitudes of the other about a particular role, and thus anticipates the behavior of the other (Bailey, 2001). Not all "others" are equally influential in this construction process. The *generalized other*, in the most abstract sense, is the view of relevant rules and roles of society as a whole. In the case of breastfeeding, marketing and media portrayals of infant care are influential (Newman & Pittman, 2002). *Reference groups* are social groups with which people identify that are capable of influencing them. Such groups provide standards, norms, attitudes, and values that individuals incorporate into themselves, or that they use in a comparison process. Family, friend, neighborhood, and workplace groups may become such reference points for breastfeeding mothers (Scott & Mostyn, 2003). *Significant others* are considered actual influential people with whom an individual interacts. Most often they are members of a primary social group where face to face contact occurs (Longres, 2000). Intimate partners have been found to exert substantial influence on mothers' breastfeeding choices (Rempel & Rempel, 2004).

Infant feeding choices can be framed in symbolic interaction terms. Individual mothers must decide whether they will take on the roles of breastfeeding or formula feeding. Decisions are made about the symbolic meanings of these behaviors for the enactment of the role of mother. Perception of the relative merits of each choice per key reference groups and significant others are pivotal considerations. A mother whose family tradition is formula feeding has a reference group that may encourage continued formula feeding. A key significant other who supports and encourages breastfeeding may prompt a behavior change.

Because differences most often exist between expectations others have of us and what we expect of ourselves, all social interaction involves negotiation and bargaining over how behaviors associated with certain roles are to be enacted. As the lines of action are negotiated, people's roles become defined both through their perception of others' expectations as well as their own expectations of themselves. Through this process of role taking and role enactment, a sense of identity is formed as the symbolic interaction continues. A mother's identity may become profoundly shaped by the symbolically charged behavior of breastfeeding in view of others. The complex dance of behavior, meaning ascription, and social norm forming is choreographed in turn through others' perceptions of this mother modeling breastfeeding.

Breastfeeding is a behavior with symbolic importance for most people. Symbolic interaction provides a helpful theoretical frame for considering choices made by mothers in an interactive social field.

### Empirical Investigations

Socialist feminist and symbolic interaction theories have been presented to help understand breastfeeding phenomena and highlight issues pertinent to constraints on breastfeeding choices. The rest of this chapter focuses on empirical literature concerning breastfeeding and low-income women. Studies pertaining to the national incidence of breastfeeding will be discussed followed by review of studies concerning social support for breastfeeding, work and breastfeeding, and sexual perceptions of breastfeeding.

#### *Incidence*

A summary of the empirical evidence regarding breastfeeding in the United States reveals that the United States remains a primarily formula-feeding culture. Breastfeeding incidence rates are the baseline measures for charting society's progress on breastfeeding goals. Most breastfeeding studies consider the influence of various factors on initiation and duration of breastfeeding. Up until 2002 the most commonly cited source for national breastfeeding rates was the Ross Laboratories Mothers' Survey (RLMS).

The mother's survey is a proprietary survey of the Ross Company, who ironically is the makers of Similac, Isomil, and Advance infant formulas (Newman & Pittman, 2000; Abbott Laboratories, 2003b). The survey began in 1954 to discover national patterns of breast and formula feeding for the ostensible purpose of company marketing. The survey compiled data monthly on infant feeding choices made by mothers with various socio-demographic characteristics. Study data revealed a startlingly persistent pattern. Breastfeeding occurs in America stratified by race, income, education, and age.

Periodically expanded (in 1982, 1985, 1991, and 1997) to include more infants, the RLMS remains the largest data source on U.S. breastfeeding rates. Since 1991, the mailed survey has been conducted monthly rather than quarterly. In 2001, 1.4 million questionnaires were distributed. Probability sampling is used from the Experian database, a database compiled from approximately 2500 sources including hospital lists, magazine subscriptions, maternity shops, etc. In 2001, this database was estimated to contain >3,000,000 of the 4,000,000 families with newborns in the U.S. population (Ryan, Wenjun, & Acosta, 2002). Ross' own scientists reported in an article on breastfeeding rates in *Pediatrics* that the RLMS has averaged >33,000 completed questionnaires monthly since 1997 representing only a 28% response rate (Ryan, Wenjun, & Acosta, 2002). At other places the same Ross affiliated scientist defended a 50% response rate for the RLMS as good for a mailed survey. Centers for Disease Control scientists, Li and Grummer-Strawn, countered that 50% is a low response rate for epidemiologic studies, and 28% is very low (Ryan, Li, & Grummer-Strawn, 2004). Indeed, the mothers who fill out a questionnaire for Ross may have different breastfeeding patterns than those who do not.

Despite the conflicts of interest that exist with a formula company monitor of breastfeeding rates, the survey has provided the only continuous record of U.S. breastfeeding trends over decades. While a 28% response rate to a mailed self-report questionnaire leaves room for inaccuracies, other surveys of breastfeeding rates with higher response rates have reported generally similar trends and rates of breastfeeding in relation to most socioeconomic and demographic factors as the RLMS (Ryan, Wenjen, & Acosta, 2002; Ryan, Li, & Grummer-Strawn, 2004). The RLMS was identified as the

main instrument used to gauge progress in meeting *Healthy People 2010* goals (Grummer-Strawn & Li, 2000; Abbott Laboratories, 2003b).

The National Health and Nutrition Examination Survey (NHANES) is another national study that yields breastfeeding rate information. However, it is not conducted as frequently as the RLMS. The Third National Health and Nutrition Examination Survey (NHANES III) was a nationally representative cross-sectional survey collected through home interviews by the National Center for Health Statistics an arm of the Centers for Disease Control and Prevention in Atlanta, Georgia. NHANES III data was collected on 8765 children over six years (1988-1994) with an overall interview response rate of 94% (Li, Ogden, Ballew, Gillespie, & Grummer-Strawn, 2002).

NHANES III, phase II (1991-1994) data show rates of exclusive breastfeeding as well as breastfeeding with supplementation. The proportion of all U.S. children exclusively breastfed were approximately 47% at 7 days, 32% at 2 months, 19% at 4 months, and 10% at 6 months. These proportions are a subset of the proportion of children receiving any breastmilk at all which were approximately 52% at 7 days, 40% at 2 months, 29% at 4 months, and 22% at 6 months. Notably, these results are similar to the RLMS for the same time period (Li, et al, 2002). These rates, from approximately ten years ago, show that progress has been made in increasing breastfeeding. At the time of NHANES III, the only groups meeting current Healthy People 2010 breastfeeding initiation target rates were more privileged groups: mothers who had graduated from college (80.2%) and families with incomes exceeding 350% of poverty (75.4%) (Li, et al, 2002). Again, this study echoes the finding that breastfeeding occurs in our society stratified by race, income,

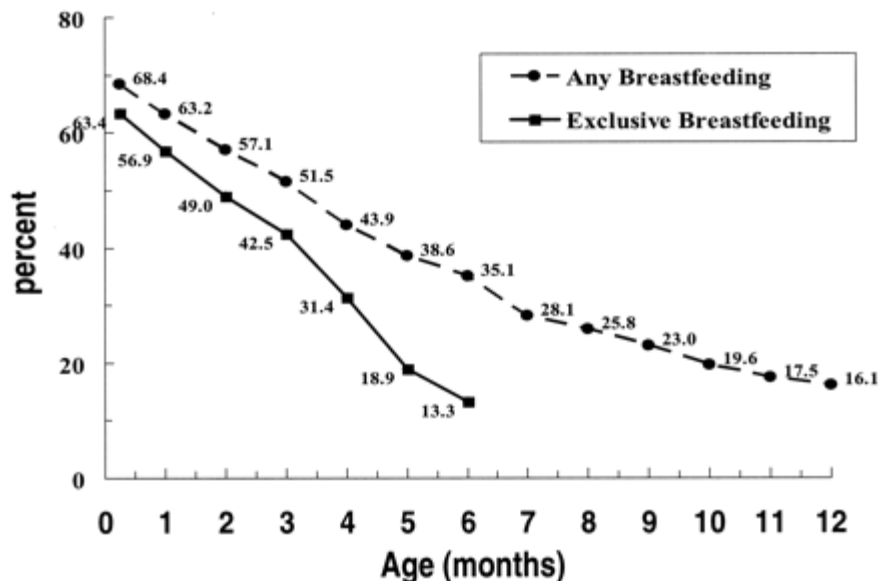
education, and age. No sub-groups in the study met the *Healthy People 2010* breastfeeding duration goals of 50% at 6 months and 25% at 12 months (Li, et al, 2002).

Due to political and scientific concerns regarding the use of the RLMS to monitor national breastfeeding the national breastfeeding committee convened a meeting at the Centers for Disease Control and Prevention in 1999 to discuss alternative systems for breastfeeding surveillance (Grummer-Strawn & Li, 2000). While governmental studies including the 1988 National Surveys of Family Growth, the 1988 National Maternal and Infant Health Survey, and the third National Health and Nutrition Examination Survey 1988-1994 (NHANES III) did collect breastfeeding data, they did not use uniform definitions for breastfeeding. They also did not yield data on a monthly or even annual basis as the RLMS does. Participants decided to continue using the RLMS to gauge achievement of *Healthy People 2010* goals. However, steps were taken to improve data collection regarding breastfeeding in future governmental surveys. Uniform definition of breastfeeding behaviors, especially exclusivity of breastfeeding, was established. And, breastfeeding incidence, duration, and exclusivity questions were immediately added to the National Immunization Survey (Grummer-Strawn & Li, 2000). Thus, since the third quarter of 2001, the National Immunization Survey has provided an alternative to the RLMS for breastfeeding rate information.

The National Immunization Survey (NIS) samples from a computer generated list of households in all geographic areas in the U.S. with a child aged 19-35 months of age. Random-digit dialing is used to contact households and a phone interview occurs with a respondent knowledgeable of the child. Approximately 35,600 phone interviews are

completed annually. In third quarter 2001, breastfeeding initiation, exclusivity, and duration questions were piloted with a random 13% of respondents,  $N=896$  (Li, Zhao, Mokdad, & Grummer-Strawn, 2003). In 2002, 13.2% of households interviewed in the NIS were selected randomly to answer questions pertaining to day care, breastfeeding, and WIC participation. Among the 3507 expected interviews, 3483 were completed, yielding a completion rate of 99.3% (Li, Darling, Barker, & Grummer-Strawn, 2005). The NIS now collects yearly data on ever breastfeeding, duration of any breastfeeding, and exclusivity of breastfeeding. Exclusive breastfeeding is defined as feeding a child using only breastmilk, water, or prescribed vitamins but no supplemental foods. The RLMS has not collected data on the introduction of other foods (Li, et al, 2005). Therefore, the NIS provides more accurate data for gauging the number of mothers who meet the American Academy of Pediatrics (2001) recommendation to breastfeed exclusively for 6 months. Figure 3 on the following page depicts any breastfeeding as compared to rates of exclusive breastfeeding in 2002.

Figure 3.

*Any and Exclusive Rates of U.S. Breastfeeding, 2002*

Source: U.S. Department of Health and Human Services Centers for Disease Control and Prevention. Li, Darling, Barker, Grummer-Strawn, (2005). Breastfeeding Rates in the U.S. by characteristics of the child, mother, or family: the 2002 National Immunization Survey, *Pediatrics*, 115(1), e31-e37.

Data from the 2002 NIS also showed that women receiving WIC were less likely than those not receiving WIC to breastfeed. Overall, the 2003 NIS found that poverty clearly interferes with breastfeeding duration. This could be seen particularly well in data showing breastfeeding duration at six months. Women self-reported their family income in the study. When the self report of family income was measured by percentage of the federal poverty threshold, an inverse relationship between poverty and breastfeeding duration was revealed. Only 28% of mothers living in households poorer than 100% of the

federal poverty level breastfed for six months. The percentage increased to 33% of mothers living in households with 100%-184% of the poverty level. For mothers living at 185%-349% of the poverty level, 39% breastfed for six months. Among the richest mothers, those living above 350% of poverty, 46% were still breastfeeding at six months

A confounding finding concerning poverty and breastfeeding was also revealed in this NIS study. There was a difference in breastfeeding rates for mothers who participated in WIC and those who were eligible but not enrolled (63.2 % vs. 86% for ever breastfeeding, 26.4% versus 55.8% for duration at 6months) (Li, et al, 2005). This group of low-income mothers was small enough not to affect the inverse relationship between poverty and breastfeeding duration discussed in the previous paragraph. However, the NIS documented that there is a small group of low-income mothers with very high breastfeeding rates. Perhaps this statistic indicates that those less likely to breastfeed are more likely to seek WIC services. Or, it may be possible that the provision of supplemental free formula to WIC mothers has the unintended consequence of discouraging breastfeeding.

Since January 2003 breastfeeding data is collected from all telephone participants of the National Immunization Survey (NIS). With a higher response rate and established representative coverage of the country, the NIS likely provides a more accurate estimate of U.S. breastfeeding incidence. The NIS has now replaced the RLMS as the most authoritative scientific estimate of U.S. breastfeeding rates. The following page graphically presents results from the most recently available NIS. Breastfeeding rates in 2005 are shown by socio-demographic variables.

Table 2. *Breastfeeding Rates by Socio-Demographic Factors, 2005 (N =27,423)*

	(Percent $\pm$ half 95% Confidence Interval)		
	<b>Ever Breastfeeding</b>	<b>Any Breastfeeding at 6 months</b>	<b>Any Breastfeeding at 12 months</b>
Total	72.9 $\pm$ 0.9	39.1 $\pm$ 0.9	20.1 $\pm$ 0.8
Race/ethnicity			
White	74.1 $\pm$ 1.1	41.1 $\pm$ 1.2	21.0 $\pm$ 1.0
Black	55.4 $\pm$ 2.5	24.8 $\pm$ 2.2	11.9 $\pm$ 1.8
Hispanic	79.0 $\pm$ 1.7	42.0 $\pm$ 2.1	22.0 $\pm$ 1.8
Asian	81.9 $\pm$ 3.1	47.1 $\pm$ 4.2	24.2 $\pm$ 3.4
Amer. Indian	67.3 $\pm$ 5.5	33.7 $\pm$ 5.1	16.7 $\pm$ 4.0
Receiving WIC?			
Yes	65.8 $\pm$ 1.4	30.3 $\pm$ 1.4	15.7 $\pm$ 1.1
No & eligible	77.6 $\pm$ 3.4	48.6 $\pm$ 4.2	28.5 $\pm$ 3.7
No & ineligible	81.9 $\pm$ 1.1	49.2 $\pm$ 1.4	24.5 $\pm$ 1.2
Maternal Age			
< than 20	50.0 $\pm$ 6.5	14.8 $\pm$ 4.4	5.4 $\pm$ 2.3
Ages 20-29	68.4 $\pm$ 1.4	31.7 $\pm$ 1.4	15.8 $\pm$ 1.2
30 & older	77.7 $\pm$ 1.1	46.2 $\pm$ 1.3	24.2 $\pm$ 1.1
Maternal Education			
< than high school	63.6 $\pm$ 2.6	32.2 $\pm$ 2.7	17.9 $\pm$ 2.3
High School	64.8 $\pm$ 1.8	29.3 $\pm$ 1.7	14.9 $\pm$ 1.4
Some College	76.8 $\pm$ 1.9	39.3 $\pm$ 2.3	19.5 $\pm$ 2.0
College Graduate	84.5 $\pm$ 0.9	52.5 $\pm$ 1.3	26.6 $\pm$ 1.2
Marital Status			
married	78.4 $\pm$ 0.9	45.2 $\pm$ 1.1	23.7 $\pm$ 1.0
Unmarried	60.3 $\pm$ 1.9	25.0 $\pm$ 1.7	11.6 $\pm$ 1.3
Poverty Income Ratio			
< than 100%	63.5 $\pm$ 2.3	29.7 $\pm$ 2.2	16.7 $\pm$ 1.9
100 to 184%	70.8 $\pm$ 2.1	35.4 $\pm$ 2.3	18.7 $\pm$ 1.9
185 to 349%	73.6 $\pm$ 1.9	41.0 $\pm$ 2.0	20.3 $\pm$ 1.6
> than 350%	82.4 $\pm$ 1.2	48.3 $\pm$ 1.6	23.5 $\pm$ 1.4

Unmarried includes widowed, separated, divorced, and never married. Poverty Income Ratio is self-reported family income to federal poverty threshold value, accounting for number of people in household.

Source: U.S. Department of Health & Human Services CDC. 2005 *National Immunization Survey*.

Retrieved March 15, 2007 from:

[http://www.cdc.gov/breastfeeding/data/NIS\\_data/data\\_2005.htm](http://www.cdc.gov/breastfeeding/data/NIS_data/data_2005.htm)

The Fragile Families and Child Wellbeing Study has also collected data on breastfeeding. The Fragile Families study, based in the Center for Research on Child Wellbeing at Princeton University, is a longitudinal study following a birth cohort of nearly 5,000 children, including 3,712 children born to unmarried parents and 1,186 children born to married parents. Through stratified random sampling in three stages: cities, hospitals within cities, births within hospitals; study families were enrolled. Interviewing occurred in the hospital. Follow-up interviews occur with both parents when the child reaches one, three, and five years old (Fragile Families and Child Wellbeing Study, 2005). The data are nationally representative of urban births in cities over 200,000 (Chatterji & Brooks-Gunn, 2004). The Fragile Families study has compiled large amounts of data on these families, infant feeding questions being only a small part of the database. In an analysis of single mothers (86% who received WIC) in this study, Chatterji and Brooks-Gunn (2004) found only 50% initiating breastfeeding for an average length of 18 weeks. Interestingly, this initiation result is 7 points lower than the comparable rate found in the RLMS for WIC mothers in 2000. At 18 points lower than the average breastfeeding initiation rate for all U.S. infants in 2000 according to the RLMS (Abbott Laboratories, 2003), this fragile family statistic reflects the differential challenge that breastfeeding presents for poor, young, single mothers.

Kimbrow, Lynch, and McLanahan (2004) used fragile family data to consider breastfeeding and the “Hispanic Paradox”. Hispanic groups, especially Mexicans, have surprisingly good health outcomes despite low socioeconomic status and other concomitant risk factors. Health outcomes fitting the paradox include low birth weight,

infant mortality, and adult mortality. In these areas Hispanics have better outcomes than blacks or whites. Breastfeeding is a positive health practice that could help explain the Hispanic paradox. Using fragile family data, Kimbro, Lynch, and McLanahan (2004) found that Mexican mothers were far more likely to breastfeed than white mothers of similar socioeconomic status. However, Hispanic rates of breastfeeding dropped steadily with higher degrees of acculturation to the U.S.

Pinkerton and Pribble (2003) found breastfeeding rates varying by cultural group in an as yet unpublished survey of Virginia WIC participants. Through structured interviews, a random sample of 2200 mothers in Virginia was surveyed at the time of their WIC clinic appointments. As with the fragile families data, hispanic mothers were more likely than their white and black counterparts to initiate and continue breastfeeding ( $p < .05$ ). Thirty-five percent of Black mothers, 55% of White mothers, and 76% of Hispanic mothers in this Virginia WIC study identified themselves as breastfeeders.

Pinkerton and Pribble (2003) were surprised to see their data showing culture trumping education level as an influence on the choice to breastfeed for Hispanics (Nancy Pribble, personal communication, May 2003). Such surprise may spring, in part, from the wide acceptance of RLMS published breastfeeding incidence rates up until 2002. Since 1992, the RLMS had consistently reported the annual Hispanic breastfeeding initiation rate to be 1-5 points lower than the White breastfeeding initiation rate (Abbott Laboratories, 2003a). It is probable that Ross data on Hispanic breastfeeding has been skewed by language and literacy issues impacting this population's return of the mailed survey

questionnaire. NIS data on Hispanic breastfeeding since 2002 show higher rates than reported by the RLMS.

Breastfeeding research has considered factors that contribute to low breastfeeding incidence rates. This dissertation research investigated three contributing variables to the low breastfeeding rates of low-income women: social support, work, and sexual perceptions regarding breastfeeding. The rest of this chapter will review the major empirical studies pertaining to each of these factors.

### *Social Support*

Breastfeeding can be a complex behavior to learn. In the initial weeks of breastfeeding, a new mother may commonly experience problems with breast engorgement, nipple soreness, and latch-on (Newman & Pittman, 2000). If there are no helpful role models or knowledgeable professionals available to show how to cope with such issues, a decision to revert to formula feeding may be unsurprising. Lack of social support, therefore, has emerged as a key constraining factor on breastfeeding choices. A link between social support and breastfeeding initiation and duration has been supported in multiple studies. Both social network support (from partner, family, and friends) and professional support (from midwives, doctors, nurses, lactation consultants, and WIC personnel) have been shown to impact the initiation and duration of breastfeeding. Symbolic interaction theory highlights the significance of reference groups and significant others in helping persons internalize standards, norms, and values into the self (Longres, 2000).

When breastfeeding has not been the traditional mode of infant feeding, initiation of the practice can meet resistance from partners and extended family members (Scott & Mostyn, 2003; Rempel & Rempel, 2004). Breastfeeding was more uncommon a generation ago (Porter, 2003), yet many new mothers look to their own mothers for guidance in mothering (Matich & Sims, 1992; Ineichen, Pierce, Lawrenson, 1997). Some young mothers have cited their own mothers' reluctance to provide substitute childcare for breastfed infants (Raisler, 2000). Having friends who successfully breastfeed and seeing family and friends breastfeed increases the likelihood of breastfeeding (Baisch, Fox, Whitten, & Pajewski, 1989; McClurg-Hitt & Olsen, 1994; Meyerink & Marquis, 2002).

Intimate partners have been found to be influential in a woman's choice to breastfeed (Bar-Yam & Darby, 1997). Giugliani, et al (1994) concluded from a study of 200 women that regardless of age, education, ethnicity, or marital status, women who believed their partners preferred breastfeeding were more likely to breastfeed than those women whose partners were ambivalent or preferred bottles. A baby's father was found to offer tangible and emotional support that is significant to mothers who are breastfeeding (Matich & Sims, 1992). Partners were found to be more important supporters than physicians, lactation consultants, or nurses to the mother (Buckner & Matsubara, 1993; Libbus & Kolostov, 1994). Using a sample of middle class mothers recruited from a Health Insurance pool, Sullivan, Leathers, and Kelley (2004) found that women who carried more responsibility for household tasks had shorter durations of breastfeeding. Relationship distress and less tangible breastfeeding assistance from fathers was also associated with shorter breastfeeding durations (Cernadas, et al, 2003; Sullivan, Leathers,

& Kelley, 2004). In a study of 213 couples, Rempel and Rempel (2004) found that men's breastfeeding beliefs predicted their partners' breastfeeding intentions and behavior over and above the women's own breastfeeding attitudes. Falceto, Giugliani, and Fernandes (2004) explored the impact of problematic relationships on breastfeeding with 153 Brazilian couples and did not find relationship problems impacting breastfeeding duration. This exceptional finding, however, occurred in a culture where almost all women initiate breastfeeding and an incredible 70% are still breastfeeding at four months (Falceto, Giugliani, & Fernandes, 2004).

Beyond the influence of fathers, women are more likely to breastfeed if other women in their social networks have also breastfed (Buckner & Matsubara, 1993; Libbus, Bush, & Hockman, 1997; McClurg-Hitt & Olsen, 1994; Meyerink & Marquis, 2002). Breastfeeding support from the mother's mother is especially important to low-income and adolescent women (Bentley, Dee, & Jensen, 2003; Dykes, Moran, Burt, & Edwards, 2003; Ineichen, Pierce, & Lawrenson, 1997; Matich & Sims, 1992; Wiemann, BuBois, & Berenson, 1998). Humphreys, Thompson, and Miner (1998) reported that the attitudes and beliefs perceived by low income women in their informal networks were more significant influences on breastfeeding choice than professionals' attitudes.

Studies of the impact of professional support on breastfeeding initiation and duration have had mixed results. There are findings that breastfeeding advice during prenatal care and classes positively impacts breastfeeding intention (Balcazar, Trier, & Cobas, 1995; Giugliani, et al, 1994; Timbo, Altekruze, Headrick, & Klontz, 1996). A meta-analysis of 13 controlled trials of 3,600 women in seven countries found a small

overall benefit impacting duration of any breastfeeding (RR= 0.90, 95% CI = 0.82-0.97) due to professional interventions. The various professional interventions included: prenatal education, hospital based breastfeeding counseling from a lactation consultant, nurse, nutritionist, or doctor, accessible phone consultation, and/or home visits. A clear benefit was found to such interventions at 2 months post-partum (RR = 0.74, 95% CI = 0.65-0.86) but no clear evidence of increased effect for longer durations (Sikorski & Renfrew, 2001). However, while professionals may positively influence breastfeeding women (Humenick, Hill, & Spiegelberg, 1998; Kuan, et al., 1999) they can also interfere with successful breastfeeding due to inaccurate and inadequate recommendations due to their own poor knowledge of breastfeeding (Coreil, Bryant, Westover, & Bailey, 1995). Humenick, et al. (1998) found that many first time mothers decreased breastfeeding due to a professional's encouragement to wean or supplement with formula.

The social support intervention that has the most research validated efficacy is actually peer or lay support. Breastfeeding peer counseling entails experienced breastfeeding mothers providing support to other mothers. A breastfeeding peer counselor is not usually a member of a new mother's primary support group, but as a mother from a similar social situation is able to connect to other mothers on a peer rather than professional level. Multiple studies have evaluated the impact of such mother-to-mother support on breastfeeding duration for low-income women (Arlotti, Cottrell, Lee, & Curtin, 1998; Caulfield, et al., 1998; Chapman, Damio, & Perez-Escamilla, 2004; Dennis, Hodnett, Gallop, & Chalmers, 2002; Ryser, 2004; Haider, Ashworth, Kabir, & Huttly, 2000; Kistin, Abramson, & Dublin, 1994; Long, Funk-Archuleta, Geiger, Mozar, & Heins,

1995; Mongeon & Allard, 1995; Morrow, et al., 1999; Pugh, Milligan, Frick, Spatz & Bronner, 2002; Schafer, Vogel, Viegas, & Hausafus, 1998; Shaw & Kaczorowski, 1999). These thirteen studies used either experimental or quasi-experimental methods to evaluate peer counseling that included various combinations of prenatal and postnatal hospital and home based visits and phone counseling from a breastfeeding peer counselor. Twelve of these studies found significant differences between the intervention and control or comparison groups for either initiation or both initiation and duration of breastfeeding. A preponderance of the evidence from these studies indicates that a peer counseling intervention helps low income mothers increase their initiation and duration of breastfeeding.

While this research appears to provide compelling support for peer counseling programs, the findings are subject to limitation. Most of the studies could be criticized on various grounds including small sample sizes, unbalanced groups, or inability to really control other experiential variables impacting study mothers. However, based on the strength of the associations found between peer counseling and increased breastfeeding durations, more funding for breastfeeding peer counseling programs is being advocated (Chapman, Damio, & Perez-Escamilla, 2004). Peer counseling was also recognized by the US Surgeon General as a way to increase social support for breastfeeding (Satcher, 2001). It is an important breastfeeding promotion strategy noted in the Department of Health and Human Services' (2000) *Blueprint for Action on Breastfeeding*. Very recently, results of randomized, controlled trials of breastfeeding peer counseling programs in the United States have been published strengthening the scientific evidence supporting the peer

counseling intervention (Anderson, et al, 2005; Chapman, Damio, Young, & Perez-Escamilla, 2004).

### *Work*

Beyond home and support networks, breastfeeding mothers struggle with the difficulty of combining breastfeeding with school or employment. Socialist feminism emphasizes how the social system of capitalist patriarchy limits options available to women economically and politically (Abramovitz, 1988). Breastfeeding is a time-intensive behavior emblematic of the domestic sphere. Maintaining breastfeeding while fully participating in employment can be challenging.

On a micro level two general aspects of this challenge are readily apparent. The first is logistical. In a work or school setting, it can be hard for a woman to find time and privacy to pump (Raisler, 2000). The second difficulty is physical. The physiology of breastfeeding works on a demand and supply basis. Abundant milk is generated because the baby suckles and empties the breast. If the breast remains full, the body will gradually adjust, producing less milk. Thus, mother and child need regular contact in order to maintain mother's milk (Newman & Pittman, 2000).

Research has repeatedly found that one of the most common reasons for early weaning is the mother's belief that she has an insufficient milk supply (Cooke, Sheehan, Schmied, 2003; Hill, 1991; Kirkland & Fein, 2004; Pinkerton & Pribble, 2003; Schwartz, et al, 2002). Because many mothers are unfamiliar with the physiology of breastfeeding (Bryant, 1992; Hill, 1991), they may be unaware of their bodies' ability to rebuild a failing

milk supply by increasing the time they allow their babies to suckle at the breast. Instead, many mothers turn to supplementation with formula which contributes further to the loss of their milk supply (Newman & Pittman, 2000). Therefore, the amount of time that a mother ends up being separated from her child because of work or school can relate to probable difficulty in maintaining breastfeeding.

The primary empirical finding concerning working mothers and breastfeeding is that the intention to return to a job does not hinder initiation of breastfeeding but does hinder duration of breastfeeding (Auerbach & Guss, 1984; Fein & Roe, 1998; Lindberg, 1996; McKinley & Hyde, 2004; Roe, Whittington, Fein, & Teisl, 1999; Ryan & Martinez, 1989; Visness & Kennedy, 1997a). A secondary finding is that the sooner a mother returns to work the less likely she is to maintain breastfeeding (Bick, Macarthur, & Lancashire, 1988; Lindberg, 1996; McKinley & Hyde, 2004; Roe, Whittington, Fein, & Teisl, 1999; Ryan & Martinez, 1989; Visness & Kennedy, 1997a). Critical discussion of highlights of these studies follows.

The impact of work on breastfeeding has been investigated with data from large government sponsored population studies. Multivariate analyses of the 1988 National Maternal and Infant Health Survey found that choosing to breastfeed at birth was not associated with mothers' employment status. However, breastfeeding duration was negatively associated with paid employment (Visness & Kennedy, 1997a). This survey of 9,087 U.S. mothers also showed that breastfeeding duration increased with longer maternity leaves (Visness & Kennedy, 1997a).

The U.S. Food and Drug Administration's 1993-94 Infant Feeding Practices Study yielded similar results. Again, breastfeeding duration but not initiation was negatively associated with work. Data showed that breastfeeding duration was positively related to longer maternity leave. If mothers continued to breastfeed after resumption of paid employment the amount of breastfeeding decreased in relationship to greater number of daily hours at work (Roe, et al, 1999). Mothers who worked part-time rather than full-time after a maternity leave were found to have breastfeeding durations similar to those of mothers without paid employment. But, full-time working mothers (more than 34 hours a week) showed breastfeeding duration reduced by an average of 8.6 weeks ( $p < .001$ ) relative to mothers not in paid employment (Fein & Roe, 1998). The most common reasons mothers reported for weaning their infants in months 1 to 5 all conceptually relate to difficulties of combining work and breastfeeding. These reasons included: concern about not having enough milk, needing to leave the infant in another's care, and needing someone else to feed the baby (Kirkland & Fein, 2003).

The Infant Feeding Practices Study is a longitudinal mail panel based on a national sample of 1,550 mothers (69% response rate) who completed eleven mailed questionnaires during their baby's first year (Roe, et al, 1999). Because the data was collected within a month of behavior that was being reported, results were less vulnerable to recall bias. The data also reflect the entire first year of feeding choices for a relatively large, national sample (Kirkland & Fein, 2003). While researchers reported efforts to align the sample characteristics relative to the U.S. census, the sample still included many more mothers of higher income and education levels (Fein & Roe, 1998). The study cannot be generalized

to apply to low income mothers as the majority of the sample consisted of white, married, middle class women (Kirkland & Fein, 2003).

Other studies also concur with the finding that maintaining breastfeeding is more difficult for women with shorter maternity leaves, and those employed full-time as opposed to part-time (Auerbach & Guss, 1984; Bick, MacArthur & Lancashire, 1988; Akimbo, 2005; Lindberg, 1996, Ryan & Martinez, 1989). Auerbach and Guss (1984) concluded from a survey of mothers recruited from 4 national magazines, that women need around 16 weeks of leave to have time to overcome any breastfeeding difficulties and establish a milk supply before returning to work. Bick, MacArthur and Lancashire (1988) found a return to work within 3 months of birth predictive of early weaning. Using the Ross Labs Mothers' Survey, Ryan and Martinez (1989) compared working and stay at home mothers breastfeeding initiation and duration rates. They saw no difference in their two groups' initiation rates, but duration rates at 6 months were 14% higher for the mothers who could stay at home. Using U.S. National Survey of Family Growth data, Lindberg (1996) found increased competition between work and breastfeeding for mothers with full-time hours as opposed to part-time hours. Lindberg (1996) observed that mothers were more likely to stop breastfeeding in the month that they reentered the workforce. She concluded that many women would need maternity leaves of at least six months in order to maintain breastfeeding that long.

Kimbro (2005) has provided one of the first analyses of predominantly low-income working mothers' initiation and duration of breastfeeding with data from the Fragile Families and Child Wellbeing Study. She found that mothers who expected to work in the

year following their child's birth demonstrated 15 percent lower odds of initiating breastfeeding than other mothers ( $p < .10$ ). Her finding on breastfeeding duration and work echoes Lindberg (1996). Breastfeeding workers had 48 percent higher odds of weaning in the same month they returned to the workforce.

Women working full-time can successfully breastfeed if they have the ability to regularly pump their milk while at work (Cohen & Mrtek, 1994; Slusser, Lange, Dickson, Hawkes, & Cohen, 2004). Slusser, et al, (2004) gauged that most mothers in their study spent an hour or less, distributed in two separate periods, pumping their milk while at work. However, their study was based in a large company that had implemented a lactation support program. It may be much more difficult to express breast milk in a work place without a lactation room, private office, or generally supportive environment.

There are a growing number of studies considering employer attitudes and practices concerning lactation (Dunn, Zavela, Cline, & Cost, 2004; Brown, Poag, & Kasprzycki, 2004; Libbus & Bullock, 2002; McIntyre, Pisaniello, Gun, Sanders, & Frith, 2002). These studies suggest that most employers know something about breastfeeding being beneficial but do not place a high priority on providing breastfeeding support. Libbus and Bullock (2002) concluded that public and employer education and policy level initiatives will be needed to enhance breastfeeding support in the workplace. Indeed, a number of states have enacted laws encouraging and/or requiring employers to provide private space for breastfeeding workers to pump milk during unpaid breaks (Baldwin & Friedman, 2001). However, there has been much controversy about compelling business cooperation and efforts to pass such legislation at a federal level have failed (Galtry, 2003).

The studies presented showing competition between breastfeeding and work were completed predominantly with mothers of higher socio-economic status. There is great need for further research exploring the relationship of employment to the breastfeeding behaviors of low income women. It is one thing to combine breastfeeding with professional work. Working mothers in professional roles often have more time autonomy and access to private space for pumping due to their work settings. It is another thing to combine breastfeeding with work in many low-income positions. A waitress, assembly line worker, sales clerk, or fast food worker typically has less control of time and space inherent to her working role.

There is a dearth of literature on low-income mothers' experiences with combining breastfeeding with work. The extant literature documents that low income working breastfeeding mothers are rarer than middle and upper income working breastfeeding mothers. However, little has been documented about the breastfeeding experience of those exceptional low-income workers who have tried to maintain breastfeeding. Investigations are sorely needed of low-income working breastfeeding mothers' typical breastfeeding durations, their milk supply and pumping experiences, as well as how their relationships with employers and co-workers may be impacted by their breastfeeding status.

Guttman & Zimmerman (2000) discovered that many low-income mothers perceive breastfeeding as a social class privilege. Such observation should prompt understanding that the "choice" to breastfeed is not just a matter of personal preference. Indeed, many studies appear to construct breastfeeding as a personal choice without adequate attention to structural forces. Galtry (1997), in line with socialist feminist perspectives, argued that

feeding methods are as much a function of structural conditions expanding or limiting women's options as they are a function of women's attitudes. She asserts, and even the research on more privileged mothers supports, that all working mothers need adequate maternity leave to establish breastfeeding followed by flexibility and facilities for pumping milk while at work in order to sustain breastfeeding.

Li, et al, (2004) explored public beliefs about breastfeeding policies in the nationally representative 2001 Healthstyles survey. They reported that 49.7% of their 3,714 respondents agreed that employers should provide such flexible work scheduling and break time for breastfeeding mothers. Forty-seven percent believed extended maternity leave would make it easier to breastfeed. However, only 27% supported tax incentives for employer provided breastfeeding accommodations in the workplace.

Macro level policies are influential to constraints on low-income breastfeeding. The 1993 *Family and Medical Leave Act* (FMLA) allows for 3 months of unpaid, job protected leave (Galtry & Callister, 2005). However, eligibility is restrictive and without income attached it may offer little assistance to many low-income families. The FMLA applies to workers who are employed by a company with 50 or more employees, work 20 or more hours a week, and have been at their positions for at least one year (Grant, 1995; Zinn, 2000). U.S. Department of Labor (2000) surveys show that employees who are covered and eligible for family leave have significantly higher family income compared to those who are not eligible. Even if a low-income mother is lucky enough to work in a job covered by the act, she may need to return to work sooner than the 3 months allowed due to economic need.

Another U.S. policy that impacts many low-income mothers is the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), more commonly known as welfare reform. This act places limits on lifetime receipt of welfare benefits and implemented welfare work requirements. Haider, Jacknowitz, and Schoeni (2003) analyzed detailed data on breastfeeding rates and required program work hours in different states. They found a reduction in breastfeeding rates for mothers on welfare to be a negative outcome of welfare reform implementation. They concluded that if welfare reform had not been adopted, national breastfeeding rates six months after birth would have been 5.6% higher than they were following welfare reform implementation.

Galtry (2003) used Ireland, the United States, and Sweden as case studies to explore national labor policies' impact on breastfeeding. Ireland has some of the world's lowest breastfeeding rates. In 1999, breastfeeding initiation was gauged at 38% with only 26% enduring to one month (Food Safety Authority of Ireland, 1999 as quoted in Galtry, 2003). Ireland provides 18 weeks of paid maternity leave at 70% of previous earnings subject to previous social insurance contribution. A further 8 weeks of unpaid leave is available. As of 2001, workplace lactation breaks are recommended as part of legislation requiring employers to undertake risk assessment of the health and safety of pregnant and breastfeeding employees. These policies updated Ireland's policies and brought them more in line with other European Union Nations with a goal of increasing the Irish implementation of breastfeeding (Galtry, 2003). As previously discussed, the U.S. has the FMLA providing 12 weeks of job protected leave but no state supported paid leave. Sweden may have the best family leave provisions in the world. According to the Swedish

National Board of Health and Welfare (2000, as quoted in Galtry, 2003) 97% of mothers initiate breastfeeding and 73% are still breastfeeding at 6 months. Swedish parents have 480 days of paid parental leave, 390 of which are paid at 80% of previous earning, the rest at a standard, flat rate. Two months of this time are reserved for each parent, in order to encourage men to utilize parental leave. These benefits are tax supported and do not cost parents' employers.

Galtry acknowledges that national leave policies have repercussions on more than just breastfeeding (Galtry, 1997; Galtry, 2000; Galtry, 2003; Galtry & Callister, 2005). Gender equity problems and restrictions on women's labor force participation are conceivable pitfalls. Notwithstanding this, Galtry (2003) concluded from her comparative national case studies that more middle and low-income mothers in the U.S. could breastfeed longer and more exclusively with enhanced policy supports. Suggested policies would include: development of paid leave opportunities, extension of entitlement to leave in state and federal laws, and the introduction of breastfeeding breaks in the workday as well as other measures to require lactation support in the workplace. In the absence of the political climate to enact such measures, she points to targeted policy choices to benefit those groups, like low-income mothers, who are most vulnerable.

### *Sexual Perceptions*

A final, and under researched constraint on breastfeeding choice is sexual perception concerning breasts and breastfeeding. There is ambivalence regarding breastfeeding within society (Li, et al, 2004) that is experienced by individual women in

intimate personal space as they make choices regarding how to feed their infants (Cleveland, 1999). The appropriateness of nursing in public is still debated (Chong, 2004; Palazzo, 2001; Stuart, 2004). Even though federal and state laws have been passed protecting mothers' rights to breastfeed in most public places (Baldwin & Friedman, 2001; Porter, 2003), mothers must still cope with the dominant notion of the sexual rather than nurturing breast with a choice to breastfeed (Stearns, 1999).

Sexual perceptions of breastfeeding have been repeatedly identified in qualitative breastfeeding research (Bentley, Dee, & Jensen, 2003; Blum, 1999; Bryant, 1992; Carter, 1995; Dykes, Moran, Burt, & Edwards, 2003; Guttman & Zimmerman, 2000; Libbus, Bush, & Hockman, 1997; Raisler, 2000; Scott & Mostyn, 2003; Stearns, 1999). Recurring themes in these studies include feelings of embarrassment about breastfeeding, discomfort with public breastfeeding, and specific beliefs about breasts being sexual.

Breastfeeding is seen as an ideal of good motherhood (Guttman & Zimmerman, 2000). At the same time it is seen as embarrassing, uncomfortable, and too limiting of a mother's freedom (Raisler, 2000). The sexual connotations tied to breasts and breastfeeding constrain whether, where, and how long a mother breastfeeds (Stearns, 1999). Many mothers feel social reticence regarding breastfeeding in public spaces (Bryant, 1992; Ineichen, Pierce, & Lawrenson, 1997; Stearns, 1999). Women have repeatedly linked feelings of vulnerability and concern about "turning men on" to public breastfeeding (Bentley, Dee, & Jensen, 2003; Sheeshka, et al., 2001; Stearns, 1999). Open breastfeeding, especially of older babies, is not yet a well accepted cultural norm in the United States (Stearns, 1999).

Embarrassment with nursing in view of others is an echoing finding in qualitative studies (Bentley, Dee, & Jensen, 2003; Bryant, 1993; Carter, 1995; Guttman & Zimmerman, 2000; Libbus, Bush, & Hockman, 1997; Stearns, 1999; Raisler, 2000). Qualitative methods including focus groups, in-depth interviews probing for meaning, and thematic data analysis are useful for documenting inner attitudes. Social interaction theory's *imaginative rehearsal*, internalized perceptions of the *generalized other*, and *symbolic meanings* are revealed with such techniques. Interestingly, there are indications that mothers' sense of others' disapproval of pubic breastfeeding may be harsher than the actual experience of such disapproval. Guttman and Zimmerman (2000) noted that mothers in their sample identified that they themselves would not feel badly about seeing a mother openly breastfeed but they felt that others in society would.

Sheeshka, et al, (2001) completed a two-part field study in which they compared observations of social interactions towards 4 bottle feeding and 4 breastfeeding mothers during restaurant visits. The second part of the study involved observations of public response to breastfeeding mothers during 24 visits to shopping malls. Quantitative analyses revealed that restaurant breast feeders got more "neutral" looks than their bottle-feeding counterparts with no differences in other types of looks or comments from customers or staff. Only 3% of people showed any response to the mall breastfeeding and none of the attention was negative. The study, however, did not uncover the inner perceptions of those in the public who may have been quietly averting their eyes. In subsequent focus groups concerning the experience, participant mothers reported they *expected* some undesirable attention but "nothing much happened" (Sheeshka, et al, 2001,

p. 37). A mother's internal perception of vulnerability to social judgment may be more significant to the choices she makes than observed public responses.

We may miss a significant point, and a powerful breastfeeding deterrent, if we minimize the significance of public breast exposure. The weeks of public discussion, and outrage, following the "accidental" exposure of Janet Jackson's breast on prime-time television during a half-time dance at the 2004 super bowl, show that many persons within the U.S. culture can be very reactive, and moralistic, concerning women's breasts (Mason, 2005). TiVo reported that this moment of public breast exposure became the most-replayed TiVo clip ever (Bennett, 2004). Given response to this one very public incident, it shouldn't be surprising that ambivalence continues regarding public breastfeeding.

Media stories of breastfeeding censure (Chong, 2004; Kang, 2006; Stuart, 2004) and legislation drafted in reaction to isolated incidents of arrest of public breast feeders (Baldwin & Friedman, 2001; Porter, 2003; Weimer, 2003), testify to the reality of a public that has been less than welcoming of breastfeeding. As recently as November 2006, thirty "nurse-in" protests occurred at Delta Airlines ticket counters across the country in response to one incident three weeks earlier when an airline attendant had told a nursing mother "you are offending me" and tried to get her to cover her nursing baby with a blanket (Kang, 2006). When the mother had refused, she and her husband and children were escorted off the plane. It only takes a few publicized negative incidents of breastfeeding to reinforce women's perceptions of an unreceptive environment.

Stearns (1999) found that women in her sample did perceive a hostile public environment. Consequently, mothers proceeded with breastfeeding as though it was a

deviant behavior that needed to be hidden. The 51 mothers she interviewed regarding public breastfeeding both accommodated to and resisted cultural definitions of the breast as sexual. Their behaviors included practicing discreet feeding, avoiding some places while claiming others, monitoring the male gaze, redefining breasts as maternal, and using code words to refer to nursing with their older babies.

Sexual perceptions towards breastfeeding have been investigated quantitatively in several studies with non-breastfeeding populations (Forbes, Adams-Curtis, Hamm, & White, 2003; Leffler, 2000; Li, Fridinger, & Grummer-Strawn, 2002; Li, et al, 2004). These studies provide estimates of the wider society's views of breastfeeding.

Forbes, et al., (2003) studied a sample of 200, mostly white college students. Participants completed scales measuring sexist attitudes and response to sexual stimuli as negative (erotophobic) or positive (erotophilic). Participants then were asked to compare breastfeeding women to bottle feeding women on a number of scales and adjectives. Scale group means were used to determine results. As was predicted, participants found to be erotophilic had more favorable perceptions of breastfeeding than those found to be erotophobic. The results lent some credence to the hypothesis that objections to public breastfeeding are at least in part rooted in the objector's perception of breastfeeding as a sexual act and the objector's discomfort with sexual stimuli, feelings, and experiences.

Leffler (2000) surveyed 100 high school girls regarding their breastfeeding attitudes. A minority of his sample endorsed public breastfeeding as "perfectly natural". The majority of these girls identified that public breastfeeding made them uncomfortable. A full third of this sample also identified public breastfeeding as very impolite. Girls

expressed more positive attitudes about public breastfeeding if they had been breastfed or had role models who breastfed.

Results from the 2000 and 2001 Healthstyles survey shed some light on public beliefs about breastfeeding in the general population (Li, Fridinger, & Grummer-Strawn, 2002; Li, et al, 2004). This is a large annual national mail survey of U.S. adults, with reported 75% (in 2000) and 73% (in 2001) response rates. The study population is built through quota sampling of almost a half million adults to yield a sample reflective of the general adult population weighted on demographic variables. Twenty-seven percent of respondents to the 2000 Healthstyles survey considered public breastfeeding embarrassing (Li, et al, 2002). Only 43% of respondents to the 2001 Healthstyles survey believed women should have the right to breastfeed in public, and only 28% thought it was appropriate to show women breastfeeding on television (Li, et al, 2004). Findings revealed more negative perceptions among non-whites, young and older persons, and those with low income and less education (Li, et al, 2002; Li, et al, 2004). While the Healthstyles survey is probably the best estimate available of breastfeeding attitudes in the general U.S. population, the representativeness of the study is limited. Almost one-third of the sample expressed no opinion at all across all the breastfeeding items (Li, et al, 2004). Notwithstanding this, results do indicate conclusively that no clear social agreement exists regarding the appropriateness of public breastfeeding.

There is a surprising lack of quantitative investigation of mothers' sexual perceptions of breastfeeding and such perceptions' impact as a breastfeeding deterrent. The need for more understanding of psycho-sexual variables impact on breastfeeding has

been identified repeatedly (Toolsie, 2000; Ryan, Wenjen & Acosta, 2002). Perhaps this line of research has not been more fully investigated because of general reticence to openly explore sexual matters. Perhaps the lack of data exists because research with a breastfeeding promotion agenda may tend to underplay the sexual significance of women's breasts. Dualistic understanding of breasts as either sexual or maternal, rather than both simultaneously, has probably played a role.

This study sought to address this gap in the breastfeeding literature through development of a scale to measure sexual perceptions of breastfeeding. Uncovering the impact of mothers' sexual perceptions of breastfeeding may help build knowledge for more effective breastfeeding support strategies. As Li, et al, (2004) found in the Healthstyles data, there may be more conservative breastfeeding attitudes among low income groups. Thus, sexual perception of breastfeeding may be more constraining on low-income mothers' breastfeeding choices than on other groups of mothers.

Socialist feminism provides a theoretical lens for conceptualizing breastfeeding choice as constrained by sexual perceptions from without in macro social structures and micro social relationships. Symbolic interactionism provides a complementary theoretical lens showing how such structures can become deterrents from within the self. Mothers internalize sexual perceptions of breasts and breastfeeding that they perceive on a macro social level (the generalized other), on an intimate group level (primary others), and on an individual level (the mind).

## Conclusion

The primary variables considered in this study as constraints on low income breastfeeding choices included social support, work, and sexual perceptions of breastfeeding. As revealed by the literature review, knowledge concerning each of these variables has progressed to different levels. Social Support has been investigated extensively. This study examined the importance of social support for low income breastfeeding mothers. Knowledge concerning breastfeeding and work has been largely studied with mothers of higher socio-economic status. Data from women who have combined breastfeeding and low income work was needed to begin filling in this gap. Perspectives from low income breastfeeding workers provide valuable information regarding the breastfeeding supports that are needed in the workplace. Knowledge regarding sexual perceptions of breastfeeding has been built largely through qualitative studies. There was a need for moving these qualitatively generated insights into quantifiable form in order to have greater insight into how much sexual perceptions of breastfeeding constrain choice. A plan for a mixed method study followed from the state of knowledge of these variables.

## CHAPTER 3 Methods

### Introduction

This chapter presents the methodological steps that were undertaken to answer the research questions posed in this dissertation. Research design, sampling, measurement, data collection, and data analysis are discussed. After initial discussion of the study population and basic research design, methodological plans used for implementation of the study are presented. A pilot project was completed with forty participants in 2003-2004 at the Charlottesville-Albemarle WIC office of the Thomas Jefferson Health District. Experience gained from the pilot informed many of the method choices made for the research.

### Study Population

WIC is a federal nutrition support program for low-income pregnant women, post-partum mothers, infants, and children up to age four years. WIC provides financial assistance for the purchase of certain healthy foods. WIC also provides nutrition counseling, monitors the health of participants, and makes referrals for additional medical and social service care. Services are offered to qualifying low income Virginia residents through the Virginia Department of Health.

Both breastfeeding and formula feeding mothers receive benefits. Any random sample of the population would yield respondents in both groups of mothers.

Breastfeeding mothers receive enhanced food packages in recognition of their need for increased healthy food consumption. Formula feeding mothers receive six months of free formula in addition to food financial assistance. The WIC program does counsel mothers to consider breastfeeding as the best nutritional option for their babies. It is unclear how much WIC's provision of free formula contributes to mothers not choosing to breastfeed or limiting their duration of breastfeeding.

By definition, mothers who are eligible for WIC benefits meet 185% of the U.S. standard of poverty (Besharov & Germanis, 1999). The WIC population includes recipients of welfare, food stamps, and Medicaid who automatically meet the program's income criteria. The population also includes low-income families of higher though still modest income. The upper limit of eligibility for a family of four would be an income of \$33,000 per year (Virginia Department of Health, 2002).

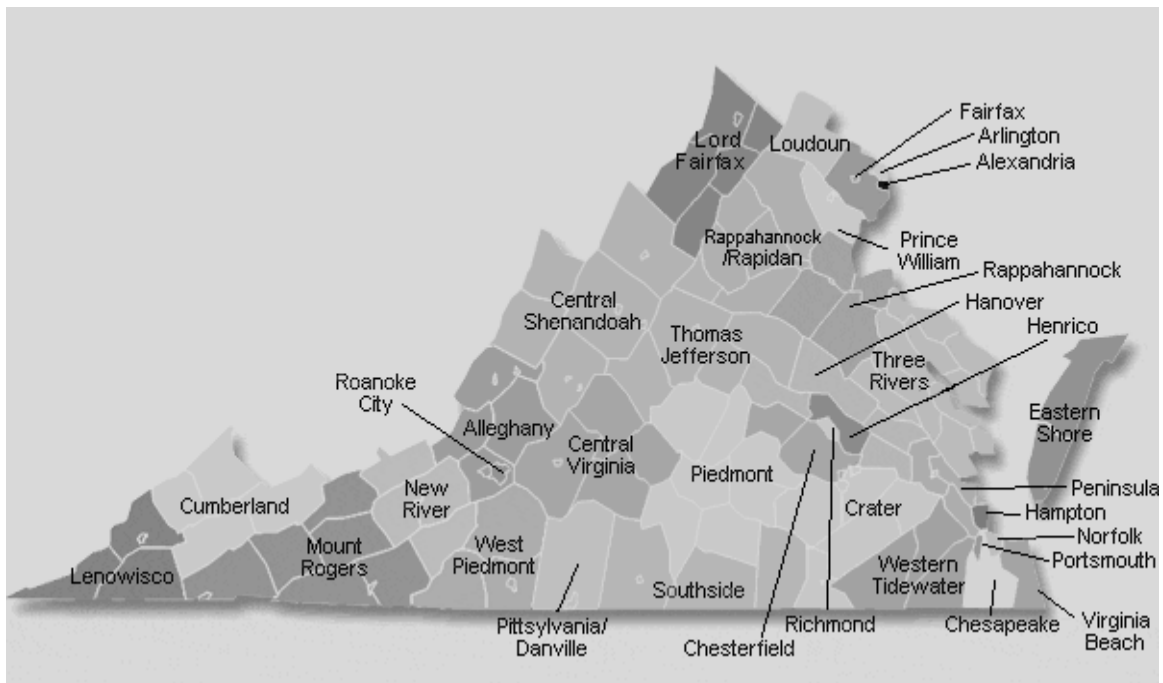
National breastfeeding incidence studies, including the RLMS (Abbott Laboratories, 2003) and the NIS (Li, et al, 2003; Li, et al, 2005), have consistently found breastfeeding rates among WIC participants to be lower than rates of more affluent groups of mothers. As such, the WIC population represents a population demonstrating constrained breastfeeding initiation and low income. This study sought greater understanding of factors constraining the breastfeeding options of low income mothers. The WIC program therefore represented an ideal population for this study.

Virginia WIC services are provided administratively through 35 health districts of the Virginia Department of Health, including 161 different local offices. In September of 2004, Virginia WIC had 149,381 families enrolled for benefit receipt (Personal

communication, Lisa Hamlett, September 2004). Participants come to the offices on “clinic days” to be certified or re-certified as eligible for services, to receive nutritional counseling and checkups, and collect WIC benefit checks. Participants are scheduled for a clinic visit approximately every three months. WIC is not an entitlement program. Participation is voluntary with participants needing to demonstrate their families’ financial eligibility. Participants are expected to comply with clinic attendance (four sessions in a baby’s first year) or their eligibility for benefits will lapse (Virginia Department of Health, 2002). WIC participation is, therefore, in a continuing state of flux with an ever changing participant base.

The population for this study comprised all WIC participant mothers with a child between 3 and 18 months in a geographically central region of Virginia. The region included the WIC health districts of Central Shenandoah, Rappahannock-Rapidan, Thomas Jefferson, and Henrico/Richmond. The region included the WIC health districts of Central Shenandoah, Rappahannock-Rapidan, Thomas Jefferson, and Henrico/Richmond. This geographic region was chosen for practical reasons. The offices within this region were within accessible driving range for the researcher to complete the personal recruitment required with limited time and financial resources. The region includes both rural and urban area, population with diversity in ethnic and racial background, and multiple feeder hospitals. A map of the Virginia Department of Health Districts illustrating the location of the region can be found on the following page.

Figure 4. Virginia Department of Health Districts



### Design

Felt constraints on the breastfeeding choices of low-income mothers were studied with a sample of Virginia Women, Infants, and Children (WIC) participant mothers. A cross-sectional survey design utilizing mixed methods was used. Quantitative data was collected through structured interviews with WIC mothers in the four purposely chosen health districts. Random multi-stage cluster sampling permits statistical generalization to the sampling frame which was inclusive of the WIC population in these geographic regions of Central Virginia. If major characteristics of the selected sample are representative of the statewide WIC population, tentative generalizations may be made about the Virginia WIC mother population.

The cross sectional survey was not weighted. Both breastfeeding and formula feeding mothers receive WIC benefits. Which group each mother was in was not known until data was actually collected. The attitudes, experiences, and choices of both groups of mothers were of interest. Contrasts between the two groups on study variables was desired.

Some short answer qualitative questions were included in the instrument. These questions permitted some individualized responses in this intimate area of inquiry. The qualitative queries yielded richer word data for thematic analysis and description of mothers' breastfeeding experiences. These questions also provided triangulation data providing reliability confirmation for other questions in the interview.

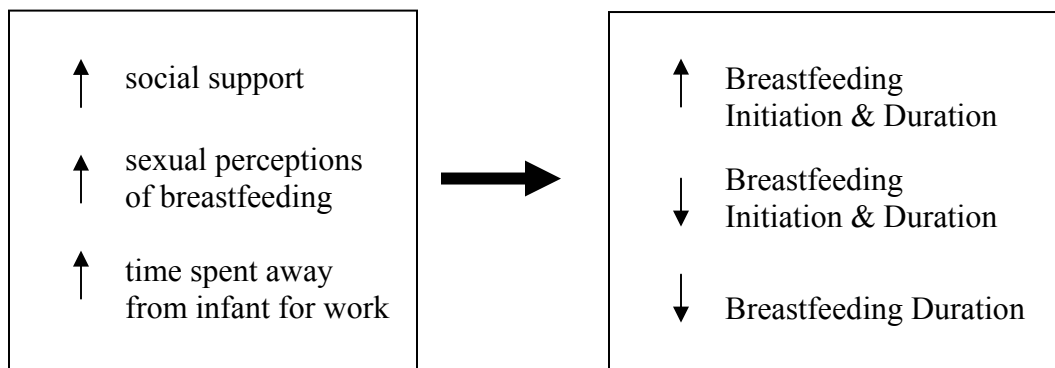
Qualitative research has been defined as research that “produces findings not arrived at by means of statistical procedures or other means of quantification” (Strauss & Corbin, 1990, p. 17). When word data is collected that cannot be reduced to numerical codes, the main aim may be to build knowledge of the unique experience. Strauss and Corbin (1990) saw such methods as most helpful in gaining perspectives on subjects of which little is known. A mixed method approach has an advantage of gaining quantitative numbers along with unique voices of participants (P. Kovacs, personal communication, October 22, 2005). The qualitative data in this study will not be generalizable to the entire sampling frame. Due to feasibility, constant comparison analysis of portions of this data will be a project completed outside of this dissertation.

## Hypotheses

It was hypothesized that mothers who perceived higher levels of social support for breastfeeding would have higher breastfeeding initiation and duration rates. Conversely, mothers who have more sexual perceptions of breastfeeding (indicated by agreement/disagreement concerning specific sexual connotations of breastfeeding, public breastfeeding behaviors, and body image) would have lower breastfeeding initiation and duration rates. Additionally, mothers who need to spend greater time apart from their infants for work (with shorter maternity leaves, and greater number of hours spent at work or school) would have lower breastfeeding initiation and duration rates.

A diagram of this basic conceptual framework for the study can be seen below.

Figure 5. Basic Conceptual Framework



## Sampling

In order to yield a probability sample, a multi-stage cluster sample was drawn of WIC participants in the identified WIC health districts of Virginia. These districts included Central Shenandoah (7 offices), Rappahannock-Rapidan (5 offices), Thomas Jefferson (5 offices), and Henrico/Richmond (6 offices). A list of all 23 WIC office sites

in these four health districts was used for the first stage of sampling. A table of random numbers was used to select two offices for on-site recruitment from each identified health district. (Henrico and Richmond health districts were combined due to their geographic proximity and fewer number of offices.) Mothers selected for the study from each selected office were selected with a second stage of randomization.

In the second stage of sampling, selection occurred from randomly chosen days from each selected WIC office sites' clinic schedule. Selected study participants included all consenting mothers meeting study criteria who attended clinic on those days. The selected sites were visited on each selected random day for the purpose of recruitment. Element selection in the second stage of sampling relied on the randomness of what mothers happened to attend WIC clinic on the days that the researcher attended clinic for recruitment. Through this process an EPSEM (equal probability of selection method) sample was selected; meaning all members of the WIC population in the identified geographic area had an equal chance of being selected (Rubin & Babbie, 2001).

Two days of recruitment were planned for each of the eight selected sites based on experience from the pilot study. In the Charlottesville-Albemarle WIC office, the locality where the pilot study was implemented, two clinic days were scheduled every week. Additionally there were two evening clinics monthly. This yielded ten clinic days each month on which recruitment could occur. Clinic participants were scheduled randomly for each clinic with attendees including new enrollees as well as those being recertified for benefits. On any clinic day pregnant mothers and mothers with children

birth through age four years will attend. Approximately 40 clinic appointments were scheduled each clinic day. It was anticipated that conditions were be generally similar in the other selected WIC office locations for on-site recruitment allowing for adequate numbers selection with sixteen total days of recruitment.

In the pilot study, only mothers with children under the age of one year met eligibility requirements. In this study, eligibility was changed. In order to insure that every participant had the opportunity to demonstrate breastfeeding duration as long as 6 months, mothers were interviewed after their baby had reached at least 6 months of age. Therefore, mothers were recruited when their babies were between 3 and 18 months old. Mothers who were recruited when their babies were less than 6 months old had interviews (or mailed questionnaires) scheduled to be completed after the child reached 6 months of age. Eligibility was extended to 18 months old in order to maximize the volume of mothers eligible for recruitment with limited resources of time and money. It was hoped that this change would also increase the number of mothers in the sample who had opportunity to attempt combining breastfeeding and work.

#### Sample Size Projections

Obtaining an adequate sample size to permit planned quantitative analyses was a challenge in this dissertation. Personal recruitment of participants at selected sites required a significant investment of time and money. Completion of interviews or follow up with mailed surveys was also a time intensive process. It was therefore desirable to obtain some sense of the minimal number of participants that would be needed in order to test for statistically significant results with planned multivariate analyses. The

methodological literature reveals no uniform consensus on how this should be done (Harris, 1985; Maxwell, 2000; Wampold & Freund, 1987). While power analyses are theoretically desirable, obtaining the necessary input values for a particular study can be difficult or sometimes only guesswork. The following discussion presents the efforts that were made to gauge an adequate sample size for this study.

Power analyses are conducted from four interrelated pieces of information, with any three of the pieces of information, the fourth can be calculated. The four components include: sample size, effect size, alpha level, and power (P. Dattalo, personal communication, September 7, 2005). Effect size refers to the expected amount of difference in the dependent variable that can be attributed to its correlation with the independent variables. As a standardized measure it is used to compare the impacts found in different studies. It is expressed as the mean divided by the standard deviation. Alpha level is the chosen significance level at which odds the researcher can be confident results are not due to chance, convention in much social science research sets this at .05. Power is inversely related to the alpha level and refers to the probability that an effect will be identified when one is actually present, convention often sets power at .80 for social science research (Hair, Anderson, Tatham, & Black, 1998).

The most difficult value to determine in order to complete a power analysis for many researchers is the effect size (Lenth, 2001; Maxwell, 2000). This was the case with this study. What was a reasonable effect size to detect? Was one extra week of breastfeeding duration reasonable? Was one extra month of breastfeeding reasonable? Is deciding to initiate breastfeeding in the first place a reasonable effect? Rules of thumb

for determining sample size in multiple regression studies have tended to persist because of this difficulty in determining a reasonable effect size. While rules of thumb may risk underpowering studies, Maxwell (2000) argues that no one formula has been deemed superior and that a researcher should ideally rely on a combination of methods when choosing a sample size.

Because of difficulty determining what a reasonable effect size should be, rules of thumb were used to determine a starting point. The sample size that was suggested by rules of thumb was entered into a power calculator with the software program Nquery to gauge what effect size the calculator would suggest for this sample size. The Nquery power calculator was also used to test the effect size for an outer limit sample size that could be expected in 16 days of recruitment based on the experience recruiting in the pilot study. Through this process I determined a lower range sample size based on rules of thumb and an upper range sample size based on best case hopes for maximum recruitment possible within the constraints of material resources for the study.

There has been disagreement among rules of thumb for sample size determination (Maxwell, 2000). A common rule of thumb for multiple regression sample size is that the ratio of  $N$  to number of predictors should be 10:1 (Harris, 1985; Wampold & Freund, 1987). Maxwell (2000) argues that that rule is too low, increasing the risk of an underpowered study. Maxwell cites Green (1991) for a more conservative rule of thumb. Green acknowledged a preference for establishing sample size via effect size calculation. However, he also detailed a method for avoiding the need for direct specification of the effect size, by simply setting sample size as a function of the number of predictor

variables. Green's (1991) specified rule of thumb formula takes into account his estimation of a medium effect size plus the number of predictor variables. His rule of thumb sample size formula is:

$$N = 104 + p$$

where  $p$  indicates the number of predictor variables. Planned multiple regression analyses had 7-10 predictor variables. Using Green's rule of thumb the minimum sample size for multiple regression should be  $104 + 7 = 111$  participants. Using Nquerry, what effect size an  $N$  of 111, with alpha of .05, and power at .80, and 7 predictor variables was calculated. The effect size calculated for the multiple R was .12, indicating that a multiple R value as low as .12 would be detected.

Power calculation was repeated for the most optimistic sample size number. This number was based on inviting 320 mothers to participate in the study (40 mothers at each of 8 selected WIC office sites) and obtaining a 65% response rate as was obtained in the pilot study. A 65% completed interview rate yielded a hypothetical final sample size of 208 mothers. Using Nquerry, what effect size an  $N$  of 208, with alpha of .05, and power at .80, and 7 predictor variables was calculated. The effect size calculated for the multiple R was .0667, indicating that this increase in sample size could detect a significant multiple R as small as .0667.

Sample size was gauged to fall somewhere within the range from a minimum of 111 to maximum of 208 participants for the multiple regression analyses. The plan was to recruit at each selected site for two days, or until forty mothers had been invited to study participation. Recruitment conditions turned out to be less optimal than expected, with

an actual final sample size of 140, which fell short of best case hopes, but were above the projected 111 sample size.

Some multiple regression analyses were planned for only those cases of mothers who initiated breastfeeding, which will exclude some of the cases in the sample and reduce power. In the pilot study 65 percent of the sample had breastfeeding duration values. (A sample of 208 mothers would then be expected to yield 135 mothers with breastfeeding duration values. Nquery power calculation with similar inputs could detect a multiple R as small as .1009.) Logistic regression analyses require greater power but all cases in the data set can be included in the analysis. It was hoped that a minimum sample of at least 150 mothers would yield adequate power for the logistic regression analyses. Hair, et al., (1998) recommend that a researcher have a sample of at least 100 observations in order to use factor analysis.

Recruitment strategy was tested in the pilot project completed in 2003-2004 at the Charlottesville-Albemarle WIC office. A day of recruitment in the pilot yielded an average of twelve willing participants. As recruitment eligibility was changed from mothers with babies less than one year, to mothers with babies between 3 and 18 months of age, and fluctuations in volume of mothers at each site were unclear, how recruitment would turn out was uncertain. Therefore, sample size projections were tentative.

### Recruitment Procedures

Recruitment procedures and interview completion strategies were developed in the pilot study. It was discovered that for this population, women experiencing the multiple demands of mothering and low income, personal contact recruitment followed

up by scheduled phone or in-person interviews yielded the greatest amount of participation. A minority of participants asked to return the questionnaire via mail. A minority of participants were also difficult to reach by telephone even though they had agreed to participate. A few of these mothers did respond when sent a letter of reminder, a blank questionnaire, and a stamped, addressed envelope (see reminder letter in Appendix C). In order to maximize return rate all these data completion strategies were also employed in this study.

On each selected recruitment day, the researcher introduced the study to possible participants as they waited for their WIC clinic appointments. All WIC recipient mothers who were at least 18 years old, with babies aged 3 to 18 months old, were invited to consider study participation. Mothers who appeared to have babies of the appropriate age were approached. The researcher would explain that she was working on a research study of baby feeding for mothers of at least 18 years of age with a baby between 3 to 18 months old. When mothers expressed interest more was explained about the study and the possibility of participation. Individuals who showed interest were handed an introductory brochure which explaining the study's purpose, risks and benefits of participation and informed consent (see Appendix A). The researcher verbally explained the following. If a mother agreed to participate, an anonymous interview would be scheduled at the mothers' convenience. The interview could be completed at the time of recruitment or at a later time by telephone or in-person. (If the mother recruited has a baby under 6 months, the interview was scheduled after the child turned 6 months old.) The interview was gauged to be completed in approximately fifteen minutes. Small (five

dollar) gift certificates were given to mothers upon interview completion as tokens of appreciation for their time. After receiving this introduction, mothers who choose to participate were able to discuss the best time and place for their interview and give their contact information directly to the researcher (See Study Contact Form in Appendix B).

In order to assess return rate, total number of mothers invited to study participation, total number of mothers declining study participation, and mothers' racial categories were tallied on recruitment days. Refusal rate at recruitment plus subsequent declined interview rate plus the number of uncompleted interviews were subtracted from the total number of mothers invited to study participation. The resulting number yielded the total return rate for the study. A return rate of 65% was achieved in the pilot study. It was hoped that a return rate at least that high would be achieved in this study. Rubin and Babbie (2001) deem a response rate of 70% as very good, and a 50% response as adequate.

#### Human Subject Protection and Informed Consent Procedures

Potential risks to participants were considered minimal and unlikely. No physical risk to participants were anticipated. Other risks anticipated for participants included possible discomfort with answering personal questions, possible concerns regarding confidentiality, and possible worry about study participation affecting their WIC benefits.

In order to reduce these risks, participation in the study was voluntary and anonymous. Identifying information was only collected for the purpose of scheduling, completing the interview, and mailing thank you gifts. Names were not kept with response data. Identifying information was destroyed after an interview or mailed return

had been completed and gift mailed. A respondent implied her informed consent by participating. The researcher explained that questions may feel very personal and that participants were free to drop out at any time. It was emphasized that study participation or nonparticipation would not affect WIC benefits in any way. Contact names were not linked to the responses or given to the WIC program. WIC personnel had no access to individual responses although the study results as a group were of interest to the WIC program.

In order to conduct the survey in this anonymous manner, no written informed consent forms were completed. In the pilot of the research a waiver of the requirement for written informed consent was requested of and granted by the VCU IRB (Virginia Commonwealth University Institutional Review Board #3282; Virginia Department of Health Institutional Review Board #40030). A waiver was again requested and obtained for this study (Virginia Commonwealth Institutional Review Board #HM10029; Virginia Department of Health Institutional Review Board #40062). The waiver was obtained in order to increase the anonymity a respondent could feel regarding participation in the study. The waiver did not adversely effect the rights and welfare of the research subjects. Risks and benefits of participation were explained in the study brochure. Implied informed consent was given through participation. No identifying information was preserved after interview or questionnaire completion.

The researcher was able to personally answer any questions or concerns at the time of recruitment in the WIC clinic waiting area. It was expected that most mothers would know almost right away whether or not they wished to participate. If some

mothers desired more time to consider whether or not they wished to participate, they were given the introductory brochure to take with them and the researcher contacted later. Consent material was targeted for comprehension by this population. Verbal explanations at the time of recruitment also insured participant understanding.

Language comprehension was an issue in the pilot study for some Spanish speaking mothers. Four mothers out the 62 invited to participate, or 6% of the total sample, declined due to minimal ability to comprehend English. All these mothers spoke Spanish. Culture has been documented to influence the decision to breastfeed (Li, et al, 2003; Pinkerton & Pribble, 2003). The RLMS has probably underestimated the rate of breastfeeding among Hispanic Americans because of literacy and language issues impacting this population's ability to return a mailed survey (Abbott Laboratories, 2003; Li, et al, 2005). It would have been desirable to not replicate this bias in this study. However, in order to be more inclusive of the Spanish speaking population, the instrument would need translation into Spanish. Rubin and Babbie (2001) describe the process of constructing culturally sensitive instruments using translation and back-translation. Two different native speakers of Spanish would be needed to help with this process. As adequate resources of both time and money were not available it was not feasible to translate the instrument. Therefore, exclusion of selected mothers who did not speak adequate English was an anticipated limitation of the study.

The researcher planned to deal with other mothers who elected participation but appeared to have hearing or cognitive difficulties on a case by case basis. No deaf or blind mothers ended up being selected. The researcher did need to adapt to mothers'

comprehension levels by speaking slower, repeating questions, and/or explaining word meanings, for mothers who appeared to have difficulty with cognitive comprehension of study questions.

### Instrumentation

A structured interview protocol for the study followed a written questionnaire (see a copy of the instrument in Appendix D). The instrument gathered fixed format data that would lend itself to quantitative analyses. The instrument also gathered short answer qualitative data that will yielded more fully descriptive information of breastfeeding choice experiences within the sample. The short answer formats provided a way to capture individual perceptions, and richer word data, in this intimate area of inquiry.

Questions in the instrument were phrased, as much as possible, to be inclusive of formula feeding and breastfeeding mothers' answers. One section of the interview applied only to mothers who had combined breastfeeding and work. These questions appeared in a different print color and were skipped over for other participants. The final section of the interview, the sexual perceptions of breastfeeding scale, was completed by all participants. This scale was placed at the end because interview rapport was clearly established by this time. Hopefully, the placement at the end, kept formula feeding mothers from feeling that the study did not account for their experiences as they had already supplied many answers regarding their own experiences by this point in the interview.

The order of study questions was chosen carefully in order to make the interview flow in a conversational mother to mother manner. Open-ended questions were asked before

sections of the interview where answers could be suggested to a participant by the instrument itself (Rubin & Babbie, 2001). The interview began with questions regarding number, age, and first names of children. Originally, in the pilot study, baby names were not asked for, but mothers almost always supplied them. It became clear as interviewing progressed that asking for first names helped to establish rapport with the mother. Subsequent questions could then be phrased in a more personal manner using her baby's name. Birth experiences that may impact breastfeeding were identified next. These included: whether their youngest baby was a multiple birth, the name of the hospital or birth center for their youngest baby, youngest baby's birth weight, whether the birth was a cesarean delivery, write-in report of any other health complications for baby or mother, and whether and how the mother received a company gift of formula following the birth. All these questions were pertinent to both breastfeeding and formula feeding mothers.

The interview then proceeded to identification of feeding choices. The dependent variables in the study were breastfeeding initiation and breastfeeding duration. The breastfeeding literature has identified the importance of uniformity in breastfeeding definitions (Grummer-Strawn & Li, 2000). As per this standard, the survey identified whether a mother had ever initiated any breastfeeding of her youngest baby. The duration of any breastfeeding at all was reported in days, weeks, or months. A mother answered in the unit that was most natural for her. The researcher later converted the duration to weeks for analysis purposes. The length of exclusive breastfeeding was also identified in days, weeks, or months. Exclusive breastfeeding is defined as feeding a child using only breastmilk, water, or prescribed vitamins but no supplemental foods. Length of any breastfeeding and

exclusivity of breastfeeding, as well as any formulas used were also identified for a mother's older children. How the youngest baby is currently being fed is then identified. If formula was used, the kind of formula was identified. Mothers were asked if receipt of formula through the WIC program influenced their feeding choice and if so a short answer blank for explaining how.

The next questions in the instrument queried the mother for open-ended short answers regarding the main reasons for her breastfeeding and/or formula feeding choices, as well as whether she liked/disliked her choices and any problems she experienced. Questions were phrased in an open-ended manner. Brief clarifying questions of the mother were also asked to make sure her reason was recorded accurately.

These questions lie at the crux of the dissertation's intent to uncover constraints on the feeding options available to low-income mothers. These questions were not asked in a fixed format that supplies possible answers because of a desire to hear the mother's reason in her own words. Prior research with low-income mothers found that some formula feeding mothers felt feelings of guilt and deprivation (Guttman & Zimmerman, 2000) at not being able to implement breastfeeding. An open-ended format requires that a mother speak from her own experience rather than endorsing a response that may sound more socially desirable to her. The format also builds more rapport as the interviewer listens to the mother's unique experience. Comparative analysis of the data obtained from these questions identified the main response themes generated by these questions.

An exploratory query of mother's support responses to feeding problems was added since the pilot. The mother identified from a list of professional and personal supporters who

she went to for help with any feeding problems with breastfeeding or formula feeding. Then she provided short answers describing the advice she got and what happened when she followed the advice. The intent of this question was to generate data that could build a composite description of a range of mothers' support experiences.

Following these short answer questions, the instrument turned to demographic questions including age, race, marital status, living situation, and years of education. Subsequent to the demographic questions, the instrument contained sections of questions measuring each of the three primary independent variables for the quantitative data analysis.

Prior studies investigating work and breastfeeding have focused on the impact of the amount of time a mother must spend away from her baby (Fein & Roe, 1998; Lindberg, 1996; Roe, Whittington, Fein, & Teisl, 1999, Visness & Kennedy, 1997a). Length of maternity leave and timing of return to a work schedule have also been identified as influential factors (Bick, Macarthur, & Lancashire, 1988; Kimbro, 2005; Lindberg, 1996; McKinley & Hyde, 2004; Roe, et al, 1999; Ryan & Martinez, 1989; Visness & Kennedy, 1997a). In the work section of this instrument, mothers first identified whether they attended school or had a job for income. Those who did, identified what their job was, how much time they spent at home before a return to a regular work or school schedule, and whether any of this time was paid leave. Mothers then identified how many hours per week were spent at school and at work. (If a mother both attended school and had a job these hours were added together for analysis purposes). Mothers also identified how many hours they spent away from their baby on a typical work or school day. Mothers then endorsed whether or not they had the experience of combining breastfeeding and work. If they did,

they answered extra questions about this experience. If they didn't, they skipped forward to the next section.

The section that only mothers who had combined breastfeeding and work answered included the following questions. Mothers identified their duration of breastfeeding following return to work in days, weeks, or months. This question tested the finding in other studies that many working mothers tend to stop breastfeeding within the month of their return to work (Lindberg, 1996; Kimbro, 2005). Mothers also identified the percentage of pumped breastmilk, supplemental formula, and/or supplemental foods their baby was fed while they were at work. The mother also reported whether she pumped milk while at school or work, approximately how long this took in minutes, and how many times per day. She also identified where she found space in the workplace to pump. Two likert scaled questions allowed her to gauge how supportive her co-workers and work supervisor were of her continued breastfeeding. The section ended with two short-answer open-ended queries. The first regarded her experience with her milk supply and continued working. The final question allowed the mother to bring up anything else about her experience with breastfeeding and work that she deemed significant.

The next section of the interview examined social support experiences. Mothers identified who their primary personal support person was from a list including: partner, my mother, a friend, or a write-in other. As detailed in chapter two, the breastfeeding literature has identified that spouses' and male partners' support of breastfeeding is predictive of whether and how long a mother breastfeeds (Bar-Yam & Darby, 1997; Giugliani, et al, 1994; Sullivan, Leathers, & Kelley, 2004; Rempel & Rempel, 2004). It was expected that this

population of mothers would include a significant portion of un-partnered women.

Therefore, the question had inclusive options to allow for social support that coming from other persons than a spouse or boyfriend.

Mothers then identified what kind of support their primary support person had provided from a list of twelve different support behaviors ranging from financial support to baby care tasks to domestic household chores. This item measured instrumental social support with scores ranging from 0, indicating no support behaviors, to 12, indicating that their support person had provided all the support behaviors. This item represents an attempt to measure instrumental social support received by a mother. Sullivan, Leathers, & Kelley (2004) found that mothers who had less help with domestic chores had decreased breastfeeding durations. McKinley and Hyde (2004) argue that social support, particularly from fathers, needs to be understood as more than just approval or disapproval of a feeding method. Rather, consistent with socialist feminist theoretical insights, active breastfeeding support should prompt some redistribution of household tasks. After the mother identified the instrumental support behaviors, she then reported whether this primary support person preferred that she formula feed or breastfeed. A short answer blank allowed her to briefly explain her answer.

Additional measures of social support followed. Symbolic interaction theory indicates that persons weigh their choices in comparison to significant others and primary reference groups in their social networks (Longres, 2000). The breastfeeding literature has validated that modeling of breastfeeding and approval of breastfeeding within a mother's social network is associated with a mother's initiation and duration of breastfeeding (Buckner

& Matsubara, 1993; Libbus, Bush, & Hockman, 1997; McClurg-Hitt & Olsen, 1994; Meyerink & Marquis, 2002). Two ratio measures of social support for breastfeeding through modeling were included in the instrument. Mothers identified the number of family members in their extended families who have breastfed. They also reported the number of their friends who have breastfed. In this manner, the instrument gathered data measuring personal social support as a combination of instrumental support, approval, and modeling.

Mothers then identified their most important professional support person from a list of possible professional supporters. They gauged how supportive this person was of their feeding choice with a likert scaled response. Mothers then also provided short answer responses regarding any person who discouraged their feeding choice and how the discouragement was communicated. There was also a likert scaled response for the mother to gauge the strength of this discouragement.

The pilot study employed an adaptation of Guttman and Zimmerman's (2000) instrument measuring perceived benefits and drawbacks of breastfeeding and formula feeding in terms of developmental and health benefits for the baby, and in terms of maternal health, logistics, and convenience for the mother. This instrument was used with permission of its original author (N. Guttman, personal communication, October 17, 2002). In the pilot study there were problems with mothers' response to this instrument. Many formula feeding mothers resisted choosing breastfeeding over formula feeding for psychological, developmental, and emotional benefits for their babies. These mothers wanted to endorse both feeding options as beneficial. The instrument as used was also repetitive and time-consuming, as mothers' identified how much a particular benefit

mattered to their choice of feeding method. The iteration of this instrument that was used in this study shortened and simplified it. Mothers identified their dichotomous choice between methods on only ten items. They then identified what was most important to their feeding choice from all ten items.

The instrument ended with a new scale under development in this study. This scale was intended to measure the degree to which mothers perceived sexual connotations to be associated with breasts, breastfeeding, and public breastfeeding behaviors by self or others, and feelings of embarrassment connected with these perceptions. The scale asked a mother in a likert format to agree or disagree with these perceptions. Items were generated by adapting reported statements regarding body image, public breastfeeding behaviors, embarrassment and/or sexual connotation regarding breastfeeding by research participants in multiple qualitative breastfeeding studies (Bentley, Dee, & Jensen, 2003; Blum, 1999; Bryant, 1992; Carter, 1995; Dykes, Moran, Burt, & Edwards, 2003; Guttman & Zimmerman, 2000; Libbus, Bush, & Hockman, 1997; Raisler, 2000; Scott & Mostyn, 2003; Stearns, 1999).

### Instrument Performance

As previously detailed, an earlier version of this instrument was employed in a pilot study with 40 WIC mothers in 2003-2004. Lessons learned from this piloting prompted changes in the instrument as detailed above. The version of the instrument used for this study was tested with one breastfeeding mother on September 24, 2005. Feedback was requested on understandability of the questionnaire items. This mother expressed no confusion with the questions and easily answered each item. This mother was a working,

breastfeeding mother with one child. She therefore responded to every section of the instrument except for questions about older children. The interview was completed within 15 minutes. The instrument was tested with another working mother who has two children on October 10, 2005. This mother also endorsed the understandability of questions. However, the interview took 23 minutes to complete.

All measures in this study, excepting the adapted Guttman and Zimmerman (2000) section, were created specifically for this study. As a result, their reliability and validity were not established through use in an earlier study. The Guttman and Zimmerman (2000) section came from the interview protocol of the original study. No psychometric properties were published about the instrument, much of the study yielded qualitative or descriptive data.

Some preliminary statements about the instrument's reliability and validity can be made. Reliability refers to an instrument's ability to yield the same results each time it is used when what is being measured has not changed. Principles that relate to reliability include stability, equivalence, and consistency. Researchers use test-retest (for stability), alternate forms (for equivalence), and internal consistency approach (for consistency), as tests for reliability (Rubin & Babbie, 2001). For this study, cronbach's alpha statistical testing of instrument scale items will demonstrate instrument reliability.

Validity refers to the extent to which a measure adequately reflects the concept being measured (Rubin & Babbie, 2001). The instrument has been constructed taking into account many scientific studies in the breastfeeding literature. The instrument was pilot tested with forty mothers, and field tested with two more mothers. These mothers appeared to find the

instrument relevant. At the very least, the instrument can be said to have content validity. Content validity is a necessary but not sufficient test for estimating an instrument's validity. Total mean scale scores did differentiate between breastfeeding mothers and formula feeding mothers in the pilot study, indicating at least a beginning level of known groups' validity for the sexual perceptions of breastfeeding scale. Factorial validity of the scale, based on factor analysis, will provide another test of the validity of the instrument.

### Data Collection and Analysis

Data collection proceeded during each interview with manual marking of the questionnaire by the researcher as the participant answered each question, either face to face, or by telephone. For those mothers who requested it at recruitment, a blank questionnaire was given to the mother with a stamped, addressed envelope for return to the researcher. Mailed questionnaires did not yield as high a return rate as scheduled phone interviews in the pilot. However, this flexible option was offered to mothers who did not wish to be bothered with scheduling an interview. In the pilot study it was a minority of mothers who preferred this mode of participation. However, any measure to increase overall response rate is worthwhile. For this study, a majority of mothers completed a questionnaire and mailed it back to the researcher. The Statistical Package of the Social Sciences (SPSS version 14) was used to create the study data set. Each completed questionnaire was entered into the computer for subsequent analysis.

Running univariate statistics on each variable according to its level of measurement was a first step in data analysis. Such analyses help detect incorrect coding and show the

extent of any missing data. Descriptive statistics, employing appropriate measures of central tendency and dispersion for variables, were used to delineate the characteristics of the study sample. Cronbach's alpha was used to show the internal consistency reliability of scale items.

Thematic analysis of qualitative data grouped mothers' responses into generally similar areas; the percentage of mothers in each thematic group was ascertained. Constant comparative analysis to identify themes in the qualitative data was also used when a great number of different responses were generated by the qualitative query. Mothers' descriptions of both discouragement and encouragement for their feeding choice were compiled to provide rich description of a range of choice experiences of study mothers.

The chart on page 91 lists study variables that were used in the quantitative analyses. Operational definitions, independence or dependence, and levels of measurement are identified.

Figure 6. *Listing of Study Variables*

<b>VARIABLE</b>	<b>IV/ DV</b>	<b>OPERATIONAL DEFINITION</b>	<b>LEVEL OF MEASURE- MENT</b>
Social Support for breastfeeding or formula feeding	IV	Approval/Disapproval of primary supporter. Reported degree of personal encouragement in feeding method from primary supporter. Number of reported family & friends who breastfed.	Nominal  Interval  Ratio
Instrumental Social Support	IV	Number of helpful domestic actions provided to mother by primary support person.	Ratio
Professional Support for breastfeeding	IV	Reported degree of encouragement in feeding method from primary professional helper.	Interval
Weekly time away for work/school	IV	Mothers' reported average hours per week spent away from baby at work/school.	Ratio
Weeks of maternity break	IV	Mothers' report of weeks following birth before a return to a regular work or school schedule.	Ratio
Breastfeeding Initiation	DV	Mothers' report of ever initiating breastfeeding for 1 week (yes/no)	Nominal
Breastfeeding Duration	DV	Mothers' report of the length of her breastfeeding duration (measured in weeks). Will be considered bf if continues any breastfeeding at all.	Ratio
Exclusive Breastfeeding Duration	DV	Mothers' report of the length of her exclusive breastfeeding (measured in weeks). Baby receives only breastmilk, water, and prescribed vitamins but no supplemental formula or food.	Ratio
Perceptions of best feeding choice	IV	Perceptions of best feeding method for particular benefits/norms.	Nominal (bf/ff)
Various Demographics	IV	Mothers' reported status on various demographics	Nominal to Ratio

### Multivariate Analyses

The first step in the multivariate analysis was factor analysis of the sexual perceptions of breastfeeding scale. Factor analysis was the first statistical analysis used to test the underlying qualities and performance of the scale. In factor analysis, there are not formal dependent and independent variables. However, in order to discover underlying patterns in the data, factor analysis uses correlations between each item with all other items in the analysis as if they were independent and dependent variables measured by Pearson's  $r$ . Factor loadings are correlations between the original item (treated as a dependent variable) and particular factors (treated as independent variables). Higher loadings make the item representative of the factor. Factor analysis yields factors which are linear combinations of the original items which summarize and reduce the original set of scores.

Several exploratory factor solutions were tested to explore which solution achieved the most conceptual sense along with the most overall variance explained for the scale. Factor solutions modeling for both several underlying concepts' measurement or one overall concept's measurement by the scale were considered. Each individual item was tested for correlations with underlying factors in the scale and with the entire scale. Poorly performing items were deleted until a product that reduced the data most economically and with the most variance explained was achieved. After the best factor solution was found for the scale, mothers' factor scores were imputed by SPSS into the data set. Factor scores were used as the measure of each participant's sexual perception of breastfeeding. These factor scores were used in the subsequent multivariate analyses.

To find the best explanatory models showing the impact of multiple contributing factors to feeding method outcomes two additional multivariate techniques were used. Linear multiple regression was used to explore factors contributing to breastfeeding duration. Linear multiple regression involves predicting the dependent variable (breastfeeding duration) for given independent variables values in a graph of plotted values for correlation coefficients. These correlations are measured by Pearson's  $r$ , an interval-ratio level measured statistic. This particular data analysis technique shows linear relationships between interval-ratio variables.

Logistic regression was used to explore factors contributing to the dependent nominal variable of breastfeeding initiation. Logistic regression is a non-linear transformation of linear multiple regression able to indicate the impact of different combinations of independent variables on the nominal dependent variable breastfeeding initiation. Logistic regression can therefore model improvement or decrease in the probability of initiating breastfeeding.

The independent variables that were entered in the regression models included: social support variables (personal encouragement for choice, professional encouragement for choice, and total number of breastfeeding role models), Sexual Perceptions of Breastfeeding variables (the factor scores emerging from factor analysis of the scale), work variables (time away for work, mother's break time from work, and mother's primary work location), and demographic variables (age of mother, mothers' education level, mothers' marital status, and race ethnicity).

## CHAPTER 4 Results

### Introduction

This research focused on breastfeeding constraints felt by a random sample of low-income mothers served by eight different WIC clinic sites in Central Virginia. A cross-sectional survey design was used. Both breastfeeding initiating and formula feeding only mothers were included in the study. This chapter presents study findings in several sections. The first section summarizes the results of data collection procedures, followed by presentation of demographic information on study participants. The next section outlines factor analysis of the Sexual Perceptions of Breastfeeding scale and discusses its validity. The third section presents multivariate regression analyses testing the three main study hypotheses. The fourth section reviews how results from the analyses answer the hypotheses. Qualitative results from participants' open ended short answer questions are presented in the fifth section. And, the final section will close the chapter with a composite synthesis of the quantitative and qualitative results.

### Data Collection Results

#### *Response Rate*

The multi-stage cluster sampling procedure outlined in Chapter Three was followed to obtain the sample. In the first stage, a table of random numbers was used to select two sites in each of four Virginia Department of Health districts from a listing of

all such WIC clinics. In the second stage, selection occurred from clinic schedules. All mothers meeting study criteria attending the selected WIC clinic on two randomly selected clinic days were included in the sample. The sixteen recruitment days, two days at each of the eight sites, yielded a smaller overall sample size than had been projected. However, the sample size obtained (N=140) was deemed adequate for the planned analyses. Sites proved to be very disparate in terms of numbers of mothers scheduled per clinic day and thus available for study selection. Greater numbers of mothers were found at the urban clinics than the rural ones, with differences reflecting the larger caseloads in these locations. Response rate was higher in rural areas. Table 3 summarizes this information.

Table 3  
*Participant Selection and Response Rate by Clinic Location*

WIC site	# Selected	# Declined	# Completed	Response Rate
Culpeper	13	1	n = 9	69%
Madison	8	1	n = 6	75%
Staunton/Augusta	17	1	n = 14	82%
West Henrico	113	17	n = 58	51%
Buena Vista	10	0	n = 8	80%
Nelson	14	0	n = 10	71%
Charlottesville	22	1	n = 14	64%
Southside Richmond	42	9	n = 21	50%
Total	239	30	N = 140	59%

The 239 mothers selected to be in the study were initially invited in person by the researcher to participate in the research while they were waiting for their WIC clinic appointment. Twenty-five mothers (10%) declined participation because they did not easily speak English. Five mothers (2%) immediately declined participation for some other reason. Two hundred and nine mothers (87%) agreed to participate in the study. Of these, one hundred and forty mothers (59%) ultimately either completed an interview or returned a study questionnaire in the mail.

The lack of a Spanish version of the study instrument seemed to be the biggest limitation on the overall response rate. Twenty-five mothers (10% of the sample) declined participation at recruitment due to language; another twelve mothers (5% of the sample) who never followed through with completion of the survey were noted to be first language Spanish at recruitment. Another sixteen persons (7% of the sample) who did return a survey were Spanish speakers who had completed the survey themselves or with the help of an English speaker. These responses were coded so that their validity could be assessed variable by variable. Only 3 of these responses were judged to have little accurate data. The section of the instrument that appeared hardest for these participants to understand was the sexual perceptions of breastfeeding scale; several left this section of the questionnaire blank. Overall, almost 22% ( $n = 53$ ) of the selected sample were first language Spanish speakers. Results of the study will need to be judged in light of this limitation.

### *Data Collection*

As detailed in Chapter 3, in order to maximize response rate, a mother's expressed preference for mode of survey completion was followed. The majority of recruited mothers wanted to fill out the questionnaire and send it back in the mail; others expressed a preference for an interview. A few mothers completed the survey in the waiting room at the time of recruitment. It was possible to complete on-site interviews with a few more mothers. Almost one third of recruited mothers mailed the survey back without prompting, or scheduled and kept a phone interview appointment. Extensive phone and mail follow-up ensued in order to encourage the remaining recruited mothers to either complete an interview or questionnaire. In total, 470 follow-up contacts by phone and mail were made to non-responding mothers. Table 4 presents mode of data collection for completed contacts.

Table 4  
*Data Collection Methods*

Survey Method	# Completed	% of Total
In-person interview	6	4%
Phone interview	32	23%
Mailed Questionnaire	95	68%
On-site Questionnaire	7	5%
Total	140	100%

Data validity is considered highest for surveys completed by interview as any misunderstanding of questions could be clarified with the researcher at the time of the

interview. Some mothers who returned questionnaires by mail left some questions blank. On qualitative sections of the instrument this did not matter. Several phone calls were made to mothers to clarify unclear or blank responses. As mentioned earlier, the lack of a Spanish version of the instrument was the biggest limitation on the validity of results.

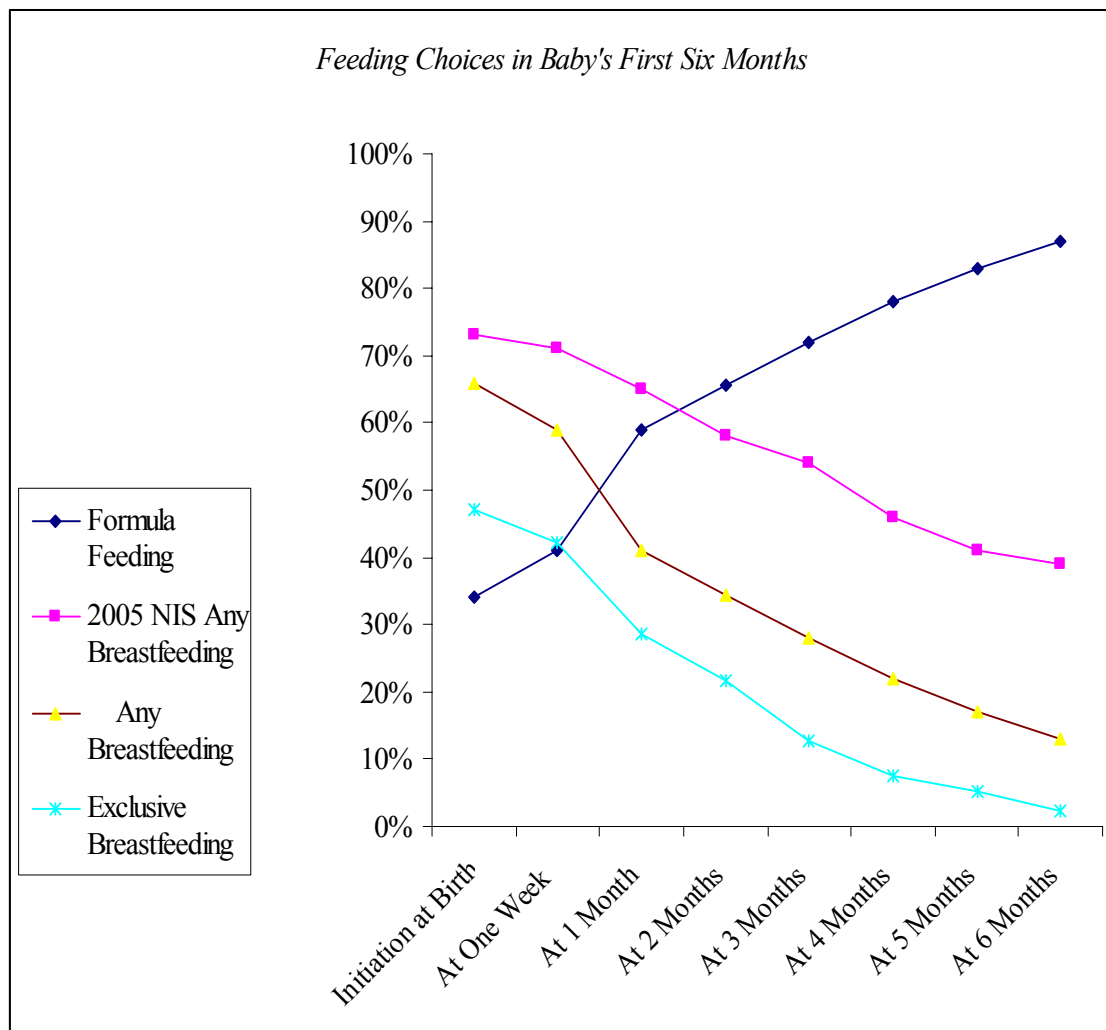
### Feeding Choices

The dependent variables in the study are initiation and duration of breastfeeding. Initiation of breastfeeding, duration of any breastfeeding, and exclusive duration of any breastfeeding were identified in the study. Figure 7 shows the percentage of study mothers' breastfeeding their infants in the first six months as compared to the most recently published national rate of any breastfeeding for all mothers found in the National Immunization Study (U.S. Department of Health & Human Services, 2006). Percentage of study mothers using only formula feeding is also included.

The breastfeeding initiation rate of 65.7% for this low income sample is 7 points lower than the national rate for all mothers at birth. It is 12 points lower than the national rate at one week. Duration of any breastfeeding falls drastically to 24-26% below the national average at all other time points. Clearly, the choice to breastfeed for mothers in this sample was constrained as this comparison documents. The majority of mothers in this study were using only formula by one month.

When compared to the national rate for other WIC mothers, this sample's birth initiation rate of 65.7% echoes almost exactly the WIC birth initiation rate of 65.8% also reported in the 2005 National Immunization Survey data (U. S. Department of

Figure 7



Health and Human Services, 2006). However, the sample's 13% any breastfeeding duration rate at 6 months is still less than half the national WIC rate of 30% breastfeeding at six months. (The NIS survey data did not provide the national WIC rate at every interval in the first six months for comparison.) This sample's breastfeeding initiation and duration rates fall far short of the Healthy People 2010 goals for 75% initiation at

birth, and 50% duration at 6 months (U.S. Department of Health and Human Services, 2001). The exclusive breastfeeding rate found in this sample is 17 points below the national WIC rate at 3 months, and 8 points below the national WIC rate at 6 months. Study analyses in subsequent sections of this chapter will explore factors associated with these constrained breastfeeding choices.

Initial figures for breastfeeding initiation may be inflated by a social desirability bias. It is easier for mothers to say they tried breastfeeding and it didn't work for some reason rather than saying they didn't want to do it at all. Some mothers in the study sample reported one instance of "trying to breastfeed" in the hospital because of encouragement to do so; yet they ceased the attempt right away for various reasons. It seems more accurate to consider a mother to have initiated breastfeeding and really intended to do so if she continued for at least one week. The National Immunization Survey has begun collecting the 7 day breastfeeding initiation figure apparently for similar reasons. Therefore, for analyses in this chapter that compare breastfeeding initiators to formula feeding only mothers, the one week rate of breastfeeding will be used.

### Demographic Information

Participant demographic characteristics are summarized on page 102. Table 5 presents demographic characteristics of all the mothers in the study first. The proportion of formula feeding and breastfeeding initiating mothers are also shown for each category. The percentage rate of formula feeding or breastfeeding initiation is shown in parentheses so this information can be compared across categories. Race/ethnicity was reduced

from four categories to three by combining Hispanic and the other immigrant category due to small numbers. Marital status was reduced from 5 categories in the raw data to 2 (married/partnered or single/separated/divorced).

Demographics reveal that age, education, ethnic background, and marital status are associated with some differences in breastfeeding choices. Higher rates of breastfeeding initiation were associated with an older age, a higher education, being of Hispanic or other Immigrant ethnicity, and being either married or partnered. While the greatest percentage of the sample were at the younger ages (67% were 27 years of age or younger), the likelihood of breastfeeding, indicated by the percentages in parentheses, was greater among those who were older. Among those 33-37, 69.2% were breastfeeding, and among those 38-42, 71.4% were breastfeeding. Although with such small sample sizes, we must be cautious in drawing conclusions from these data. Those who attended or graduated college were also more likely to have initiated breastfeeding, with over  $\frac{3}{4}$  of these mothers (77.7%) having initiated breastfeeding. Interestingly, almost all of the Hispanic and other immigrant group mothers had initiated breastfeeding (92.3%), as well as 75% of mothers who were married or partnered. However, almost all groups had some mothers choosing to initiate breastfeeding while others did not.

Table 5  
Sample Demographics (N=140)

Variable	Category	N	Total Sample %	Formula Only (n=48)		Breastfeeding Initiating (n=92)	
Age	mean years	140	25.97	25.2		26.5	
Age Intervals	18 to 22 years	44	31.7%	16	33.3% (36.3%)	28	30.4% (63.6%)
	23 to 27 years	49	35.3%	17	35.4% (34.6%)	32	34.7% (65.3%)
	28 to 32 years	26	18.7%	9	18.7% (34.6%)	17	18.4% (65.3%)
	33 to 37 years	13	9.4%	4	8.3% (30.8%)	9	9.7% (69.2%)
	38 to 42 years	7	5.0%	2	4.1% (28.6%)	5	5.4% (71.4%)
Education	mean years	140	12.32	12.0		12.8	
Educational Level	< high school	35	25.3%	16	34.0% (45.7%)	19	20.8% (54.2%)
	high school grad	53	38.4%	21	44.6% (39.6%)	32	35.2% (60.3%)
	Attend or graduate College	45	32.6%	10	21.3% (22.2%)	35	38.5% (77.7%)
	Advanced degree	5	3.6%	0	0 ( 0.0%)	5	5.4% (100%)
Race/Ethnicity	White	69	49.3%	24	50.0% (34.8%)	45	48.9% (65.2%)
	Black	45	32.15%	22	45.8% (48.8%)	23	25.0% (51.1%)
	Hispanic &	20					
	Other immigrant	6	18.4%	2	4.2% ( 7.7%)	24	26.1% (92.3%)
Marital Status	Married/Partnered	56	40.0%	15	31.3% (25%)	42	45.7% (75%)
	Single/Sep/Div	84	60.0%	33	68.8% (39.3%)	50	54.3% (59.6%)

### Factor Analysis of the Sexual Perceptions of Breastfeeding Scale

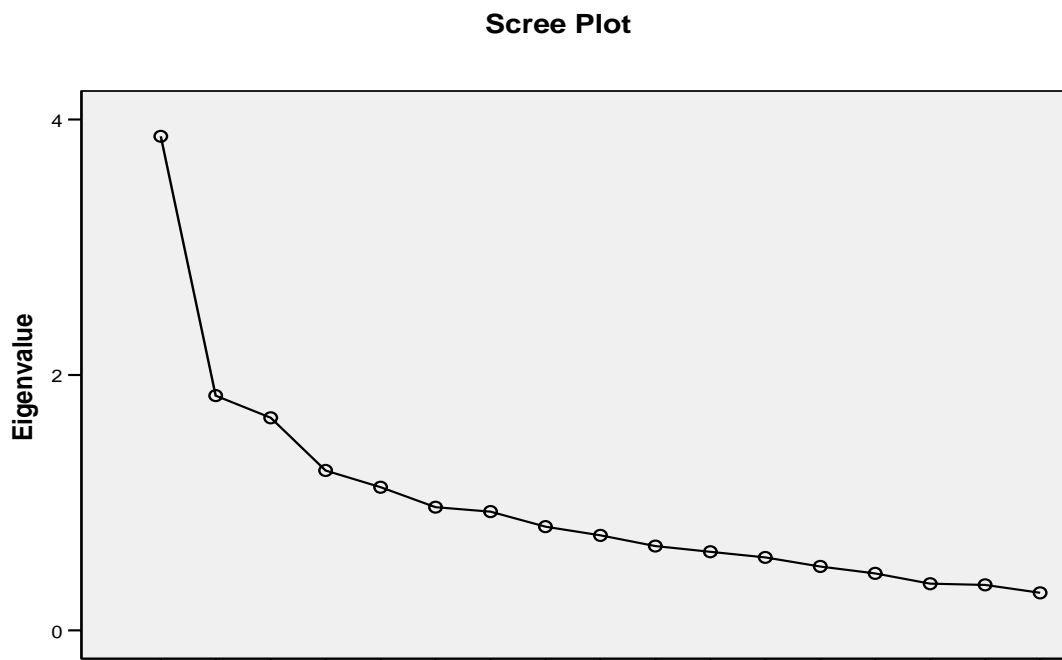
A main purpose for this study was to create a new instrument to measure sexual perceptions of breastfeeding. A summated rating scale was constructed for the study following steps outlined by Spector (1992). Sexual perceptions regarding breasts, breastfeeding, and public breastfeeding behaviors by self or others, and embarrassment connected with these perceptions, were measured on a 5 point likert scale. Items were generated by adapting reported statements regarding body image, public breastfeeding behaviors, embarrassment and/or sexual connotation regarding breastfeeding by research participants in multiple qualitative breastfeeding studies (Bentley, Dee, & Jensen, 2003; Blum, 1999; Bryant, 1992; Carter, 1995; Dykes, Moran, Burt, & Edwards, 2003; Guttman & Zimmerman, 2000; Libbus, Bush, & Hockman, 1997; Raisler, 2000; Scott & Mostyn, 2003; Stearns, 1999).

The original item pool had 27 items. Eleven worded in terms connoting comfort with breastfeeding as a non-sexual concern, and 16 worded in terms connoting discomfort with breastfeeding due to sexual concerns. For each item, a higher score should represent a higher level of the construct sexual perceptions of breastfeeding. Therefore, a response agreeing with an item connoting breastfeeding as a sexual concern and disagreeing with an item connoting breastfeeding as a non-sexual concern should generate a higher score on sexual perceptions of breastfeeding. Varying the directionality of questioning reduces bias produced by respondents who tend to respond to all questions in an acquiescent or negative manner (Rubin & Babbie, 2001).

Spector (1992) recommends an initial sample size between 100-200 respondents for beginning scale development. For this analysis, 133 of the 140 study participants had answered this section of the survey. In order to insure scale validity 6 more cases were omitted from the factor analysis due to possible culture or language misunderstanding. The remaining 127 cases were used to explore the dimensionality demonstrated by the scale. The Statistical Package of the Social Sciences (SPSS), version 14, was used to conduct the factor analyses. Principal Axis factoring with Varimax rotation and Kaiser normalization were options chosen to perform the analyses. Subjective judgment must be used to decide (1) the number of factors in a scale, and (2) the interpretation of those factors (Spector, 1992). This means that a researcher needs to determine whether the factors that are statistically grouped by the analysis also make conceptual sense. The naming of the factor emerges from the conceptual themes that are seen in factor items.

Due to the inclusion of 3 general types of items in the scale (items regarding embarrassment at public breastfeeding behaviors, specific sexual beliefs about breastfeeding, and tolerance of others' breastfeeding) a 3 factor solution was suggested. Indeed, a 3 factor solution seemed to make more sense than 1, 2, 4, 5, or 6 factor solutions. In a final solution, three factors emerged with eigenvalues greater than one as can be shown by the scree plot in Figure 8 on page 105.

Figure 8.



Cattell (1966) recommended solutions using all factors prior to where a plot levels off. The scree plot for this final solution shows clearly that three factors emerge before a drop in eigenvalue and a leveling of subsequent data points. Table 6 presents the factor loadings for the final 17 item 3 factor solution for the scale. The factoring yielded simple structure in the matrix with clear highs and lows.

The Kaiser-Meyer-Olkin test assesses whether scale items belong together; whether or not scale variables are homogenous. The three factors together show some homogeneity. The KMO test on this three factor solution was .707. According to guidelines suggested by Kaiser and Rice (1974), a KMO value of .707 is a “middling” scale score. After rotation,

this three factor solution accounted for 33.096% of the total variance in the scale. As scale validation is an evolving process as scales are refined over multiple studies, this initial solution for first use of a new scale was deemed acceptable for the purposes of this study.

Table 6.

*Sexual Perceptions of Breastfeeding Scale Factor Loadings*

Item Stem	Factor Loadings		
	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>
okay for kids to see nursing	.582	.051	.192
careful about breastfeeding in front of children...	.559	.175	.042
risk of breastmilk leaking too embarrassing	.557	.125	.099
careful with shirt no big deal	.542	.157	.003
I feel comfortable seeing mothers nurse	.530	.161	.024
embarrassed at restaurant table	.500	.241	-.149
breasts just seem sexual to me	.471	.036	.086
uncomfortable if mother nurses in public	.436	-.162	-.122
people can get used to being around breastfeeding easily	.421	.143	.111
a breast milk bottle is so personal	.400	.220	.190
it's perverted if it feels good to a mother when she breastfeeds	.383	-.073	.118
a mother who makes the choice to breast- feed shouldn't have to hide it	.050	.893	-.144
it's their problem if some people don't like to see nursing	.142	.613	.115
if partner doesn't like breasts being used by baby, shouldn't breastfeed	.142	.394	-.009
probably turns men on to see woman nursing-	.024	.176	.727
if mother still nursing her 2 year old probably for own sexual needs	.159	.013	.615
most men think partner's breasts for them	.072	-.162	.361

*Coefficient alpha* or *Cronbach's alpha* (Cronbach, 1951) is a statistical measure of the internal consistency of a scale. Nunnally (1978) argued that alpha should be at least .70 for a scale to demonstrate acceptable internal consistency. Cronbach's alpha was used in an item analysis process to find those items that formed an internally consistent scale. Initial analyses with all 27 items achieved only a .714 alpha. An item analysis process employing alpha was used to further refine the scale. Items that were performing less well in the analysis were deleted, and alpha was re-checked, until the most parsimonious scale with the most optimal explained variance was found. After deleting ten items, the final factor solution arrived upon improved the overall internal reliability of the scale to an alpha of .761 with 17 items. Again, as construction of a valid and reliable scale is ideally an evolutionary process spanning more than one study with one sample, this level of internal reliability for the first use of this scale was deemed acceptable. The first factor derived in a factor analysis usually has the largest number of items; but every additional factor should have at least three items which load most heavily on them (P. Dattalo, personal communication, December 6, 2006).

The sexual perceptions of breastfeeding scale yielded three factors. Factor 1, named *discomfort with public breastfeeding*, was based on participant scores on eleven items. After rotation, it had an eigenvalue of 2.754 and explained 16% of the variance. This factor had an alpha of .771. Factor 2, named *right to breastfeed*, was based on three items. After rotation, it had an eigenvalue of 1.646 and explained 10% of the variance. It had an alpha of .656. Factor 3, named *concerns about breastfeeding and sexuality*, was also based on three items. After rotation, it had an eigenvalue of 1.226 and explained 7% of the variance. It had an alpha of .54.

As discussed earlier, factor solutions must not only fit the data statistically, solutions should also be interpretable conceptually (Spector, 1992). When the best solution has been found for the number of factors to derive, the thematic content of the items on each factor should also have a coherent logic and face validity. Table # names the three derived factors and lists the items loading on each factor.

Table #

*The Sexual Perceptions of Breastfeeding Scale*

Factor Name	Items
Discomfort with Public Breastfeeding	<p>I think most people are uncomfortable if a mother nurses her baby in public.</p> <p>It would embarrass me to nurse at a restaurant table.</p> <p>It's okay for kids to see nursing so they learn another idea for feeding babies.</p> <p>I think most people can get used to being around breastfeeding fairly easily.</p> <p>You should be careful about breastfeeding in front of older children so they don't get the wrong idea.</p> <p>When I see mothers nursing their babies, I feel comfortable with it.</p> <p>Breasts just seem sexual to me.</p> <p>If a mom isn't real careful about how she lifts her shirt to nurse and her breast shows, it is no big deal.</p> <p>It's really better to leave formula with your child care person because a breast milk bottle is so personal.</p> <p>It's perverted if it feels good to a mother when she breastfeeds.</p> <p>The risk of breast milk leaking and other people noticing is too embarrassing for me.</p>

Right to Breastfeed	<p>If a woman's partner doesn't like her breasts being used by the baby, she shouldn't breastfeed.</p> <p>It's their problem if some people don't like to see a mother nursing.</p> <p>A mother who makes the choice to breastfeed shouldn't have to hide it.</p>
Concerns about Breastfeeding and Sexuality	<p>Most men think their partner's breasts are for them.</p> <p>It probably turns men on to see a woman nursing.</p> <p>If a mother is still nursing her two year old it is probably for her own sexual needs.</p>

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Mean differences for the two feeding groups varied on the three factors. On *discomfort with public breastfeeding*, the group mean for formula feeding mothers was 30.33 as compared with a mean of 26.48 for breastfeeding initiating mothers. On *right to breastfeed*, the groups were almost the same, the group mean for formula feeding mothers was 5.09, and for breastfeeding initiating mothers was 5.11. Mean differences were detectable on *concerns about breastfeeding and sexuality*, the group mean for formula feeding mothers was 7.76 and for breastfeeding initiating mothers it was 6.95. SPSS 14 imputes a factor score for each participant on each factor into the data set. These scores represent the mothers' factor values in three dimensional space, they are no longer in the same format as the original scale (P. Dattalo, personal communication, January 17, 2007). These factor scores can then be used mathematically along with other variables in subsequent analyses.

Differences between the breastfeeding initiating mothers and formula feeding mothers in the sample were tested for each sexual perception of breastfeeding factor. On factor 1 *public breastfeeding discomfort* the difference between sample means of

.2890408 (formula feeding) and -.1528262 (breastfeeding initiating) was found to be significant ( $t = 2.830$ ,  $df = 131$ ,  $p < .005$ ). On factor 2 *right to breastfeed* the difference between sample means of -.0473968 (formula feeding) and .0250604 (breastfeeding initiating) was not found to be significant ( $t = -.439$ ,  $df = 131$ ,  $p = .661$ ). On factor 3 *concerns about breastfeeding and sexuality* the difference between sample means of .2057878 (formula feeding) and -.1088073 (breastfeeding initiating) was found to be significant ( $t = 2.144$ ,  $df = 131$ ,  $p < .034$ ).

### Validating the Sexual Perceptions of Breastfeeding Scale

Validity is defined as “the extent to which any measuring instrument measures what it is intended to measure” (Carmines & Zeller, 1979, p. 17). In the social sciences various types of validity are sought. The discussion of the factoring of the Sexual Perceptions of Breastfeeding Scale has already delineated the case for some of the types of validity being present in the scale. These validities will be reviewed here.

Face validity refers to whether an instrument appears to measure what is intended. Face validity appears to be present in the items of the scale as each item appears to be a reasonable part of the factor to which it loaded. Content validity refers to whether experts in a subject area would agree that an instrument covers the waterfront of what should be included to adequately measure the subject (Rubin & Babbie, 2001). As the items were adapted from breastfeeding concerns expressed by mothers in qualitative studies published in the breastfeeding literature (Bentley, Dee, & Jensen, 2003; Blum, 1999; Bryant, 1992; Carter, 1995; Dykes, Moran, Burt, & Edwards, 2003; Guttman &

Zimmerman, 2000; Libbus, Bush, & Hockman, 1997; Raisler, 2000; Scott & Mostyn, 2003; Stearns, 1999) it can be seen as representing what other experts in this area have discovered about sexual perceptions of breastfeeding. Face and content validity are considered necessary but not sufficient for judging the validity of an instrument (Rubin & Babbie, 2001).

Factorial validity is said to be present when an instrument demonstrates through a variety of statistical methods the discovery of clusters of interrelated variables. Every factor is defined by those items that are more highly correlated with each other than with other items (Carmines & Zeller, 1979, p. 59). Statistically, the extent that each item is correlated with each factor is shown by its factor loading. The higher the factor loading the more an item contributes to that factor. The factor analysis of the Sexual Perceptions of Breastfeeding scale substantiated the scale's factorial validity. Yet, even this may not be quite enough to prove the validity of the instrument.

Criterion validity is assessed by determining an instrument's performance by comparing it to an external standard or criterion that demonstrates the concept measured (Rubin & Babbie, 2001). This could be another instrument that is already judged to be reliable and valid, or this could be a behavioral indicator. The Sexual Perception of Breastfeeding scale was created because of a lack of such an instrument. Therefore, this external criterion is not available. The scale might be said to have predictive validity if scores on the scale will predict the implementation of breastfeeding for a sample of pregnant mothers. This may be a possibility in the future, but at this time this criterion is not yet available. Known groups' validity is shown by an instrument when scores

differentiate between two different groups who are known to be different on the concept being measured. Even this type of validity can not be assumed as a possible test of validity as it is not yet known what groups demonstrate differences on sexual perceptions of breastfeeding.

Construct validity is said to be present when a measure relates to other variables within a system of theoretical relationships (Rubin & Babbie, 2001). When the measure performs as theoretically hypothesized it can be said to have construct validity. To the extent that the Sexual Perceptions of Breastfeeding scale variables perform as theoretically proposed, the scale can be said to have construct validity.

One of the hypotheses of this study is that mothers with increased sexual perceptions of breastfeeding will have lower rates of breastfeeding initiation. A test for mean differences between mothers who initiated breastfeeding and those who did not on each sexual perception factor is one test of this hypothesis. Significant *t*-tests (see p. 14) demonstrated mean differences between formula feeding mothers and breastfeeding initiating mothers on two of the sexual perception factors *public breastfeeding discomfort* and *concerns about breastfeeding and sexuality*. Formula feeding mothers showed statistically significant higher mean values on both these factors as a group than breastfeeding initiating mothers as hypothesized. These significant tests are another testament to the validity of the Sexual Perceptions of Breastfeeding scale.

Additional exploration of the validity of the scale will be considered as we turn to other planned analyses to test the three main hypotheses in this study. Multivariate regressions will be used to model sexual perceptions, social support, work, and

demographic variables impact on the initiation and duration of breastfeeding for mothers in this sample. If support for the study hypotheses that increased sexual perceptions of breastfeeding decrease initiation and duration of breastfeeding can be shown, further construct validity for the scale will then be verified. Linear multiple regression analysis will be used to model explanations for mothers' breastfeeding duration. Logistic regression analysis will be used to model explanation for mothers' odds of initiating breastfeeding.

### Multivariate Regression Analyses

Multivariate models were used to model explanation of the dependent variables breastfeeding duration, exclusive breastfeeding duration, and breastfeeding initiation. Linear multiple regression was used to model explanations for the dependent variables breastfeeding duration and exclusive breastfeeding duration. Breastfeeding duration was measured in weeks. Mothers identified that they had breastfed their youngest baby anywhere from 0 to 24 weeks. Mothers also identified their exclusive breastfeeding duration measured in the same time frame. Logistic regression was used to model the nominal dependent variable breastfeeding initiation. Mothers were classified as having initiated breastfeeding for at least one week (initiation = 1), or as having not initiated breastfeeding for at least one week (initiation = 0). Independent variables entered into the regression models included variables measuring social support, work, and sexual perceptions of breastfeeding.

Social support was indicated by five different variables. Strength of personal encouragement from a partner or primary support person for mother's feeding choice was

measured by mother's likert scaled report of this encouragement. Professional encouragement of mother's feeding choice was measured by mother's likert scaled report of this encouragement. Role modeling of breastfeeding was measured by mother's reported number of family and mother's reported number of friends who had breastfed their babies. A total number of breastfeeding role models was computed by adding family and friend role models together. An instrumental support score was obtained by mother's report of the number (out of twelve options) of different baby care and domestic household tasks that her partner or support person helped her perform. This score was not significant in an initial analysis. As the measure didn't distinguish between regular help and occasional help with tasks, its validity as a measure of domestic household assistance was questionable. Therefore, this variable was excluded from the final analysis.

The literature on breastfeeding and work identifies the time that mothers need to be separated from their babies for work as impacting their ability to endure with breastfeeding. Both maternity leave time (the time following a birth before a mother returns to a regular work or school schedule) and the amount of time a mother is separated from her baby after she returns to work have been found to impact the duration of breastfeeding (Auerbach & Guss, 1984; Fein & Roe, 1998; Lindberg, 1996; McKinley & Hyde, 2004; Roe, Whittington, Fein, & Teisl, 1999; Ryan & Martinez, 1989; Visness & Kennedy, 1997a). In this low income sample only 44.5% of the participants had any paid employment. Of the employed mothers, only 12 individuals (8% of the sample) reported a paid maternity leave at the time of their baby's birth. And, seven of these

individuals had pay for a month or less. This brought up a problem of deciding how to gauge maternity leave for the sample. Should leave be considered actual paid leave or break time from work? Both paid leave and break time seem conceptually related to the ability to continue breastfeeding. Break time gives a mother time to heal from a birth, regain energy, figure out the mechanics of breastfeeding with her baby, and establish a milk supply (Lindberg, 1996). Paid leave obviously helps the mother and family unit survive financially. In contrast with studies of higher socio-economic status mothers, paid leave time for this sample had little statistical possibility of helping these mothers breastfeed longer because so few had the luxury of a paid work break and overall durations were relatively short for the majority of the sample. Therefore, paid leave was not considered in the model. Break time appeared to have more possibility of influence. A variable was recoded for all mothers showing their weeks of break time in the first six months post-partum before a return to a regular work or school schedule. Another work variable was a nominal variable indicating the primary location of mothers' work as either away from the home or in the home. The location variable was dummy coded for analysis. The survey questions that were used for constructing this variable are listed in Table 8. The third work variable was a ratio level variable showing time away for work or school after a return to a regular schedule. Mothers reported their weekly average hours spent away from baby for work and/or for school.

Table 8.

*Location of Mothers' Work (N=140)*

Category	Frequency	Percent
<u>Location Primarily Away from Home</u>		
Mother at work	54	38.6
Mother at school	6	4.3
Mother at work & in school	8	<u>5.7</u>
	Total	48.6
<u>Location Primarily At Home</u>		
Stay at home mother	65	46.4
Paid job at home mother	4	2.9
Mother minimal work hours (<10)	2	<u>1.4</u>
	Total	50.7
Missing	1	.7
Total	140	100

As discussed earlier, sexual perceptions of breastfeeding were measured with the factor scores from the sexual perceptions of breastfeeding scale. The factors *discomfort with public breastfeeding* and *concerns about breastfeeding and sexuality* were hypothesized to negatively impact breastfeeding duration. The factor *right to breastfeed* was hypothesized to positively impact breastfeeding duration.

Demographic variables included in the analysis included age, educational level, marital status, and racial background. As the sample size was relatively small, a reduction in number of variables included in models was desirable in order to maximize statistical power. Mother's age was measured at the ratio level. Mother's education was recoded to an interval level (less than high school diploma, high school graduate, attend

or graduate college, and advanced or professional degree) to differentiate educational levels attained. Prior breastfeeding research has found mothers' partners' support for breastfeeding to be correlated with mothers' initiation and duration of breastfeeding (Bar-Yam & Darby, 1997; Giugliani, et al, 1994; Matich & Sims, 1992; Rempel & Rempel, 2004). Therefore, marital status was reduced to two categories: married/partnered or never married/divorced/separated and coded as a dummy variable for the analysis. Race and ethnic background was reduced from the twelve original categories to three: White, African American, and Other Culture (other culture included Hispanic origin, Asian origin, Middle Eastern and African Immigrant). The race variable was then dummy coded for analysis with the white category as the reference category.

A correlation matrix of the independent variables was used to assess for multicollinearity. Correlations between the three work variables signaled a possible problem with multicollinearity. The dummy coded 'mother stays at home' variable was highly correlated ( $r = .834, p < .001$ ) with the ratio work variable 'weekly hours spent away from baby for work and/or for school'. The time weekly away variable also showed a strong negative correlation ( $r = -.654, p < .001$ ) with the ratio variable mother's post-partum break time. Surprisingly, the post-partum break time variable showed the very same negative correlation ( $r = -.654, p < .001$ ) to the nominal mother stays at home variable. Multicollinearity diagnostics on each model were studied to decide if the presence of each work variable could be justified. In preliminary analyses, having all work variables added about 1.7% explained variance to the model, however, both mother stays at home and mother's break time variables were not individually significant.

Further assessment of the collinearity between the work variables from this preliminary model showed tolerance coefficients  $>.20$  and variance inflation factor  $< 4.0$ . These numbers suggested the upper limits of acceptability (Hair, et. al, 1998). Overlap in measurement between the three variables was indicated. Thus, the nominal 'mother stays at home' and the ratio 'mother's post-partum break time' were removed from the final model. No other independent variables had correlations  $>.5$  with other independents.

To assess the possibility that WIC clinic site impacted the dependent variable 'breastfeeding duration', clinic sites were dummy coded and correlated with the breastfeeding duration variable. The Henrico health district West Henrico site was used as the reference category as the largest number of cases came from that site. The Staunton and Buena Vista sites were combined because they were both selected from the Central Shenandoah health district. Culpeper and Madison sites were combined because they were both selected from the Rappahannock-Rapidan health district. Charlottesville and Nelson were combined because they were both selected from the Thomas Jefferson health district. Southside Community Center site was independently coded from the Richmond health district. All correlations were  $< .2$ . A correlation  $> .3$  would indicate a need to control for WIC clinic site (Personal communication, P. Dattalo, January 24, 2007).

Linear multiple regression analysis is used to model multiple independent variables contribution to the variation of a ratio level dependent variable. Logistic regression analysis is used to model multiple independent variables contribution to the odds of a nominal level variable's occurrence. The regression analyses were computed in

SPSS 14. Each analysis used all cases that had complete information for all the included variables.

Post hoc power analysis was used to insure that the linear multiple regression models had sufficient power. The first model (identified as Model 1) used 127 cases, the second linear multiple regression model used 82 cases (identified as Model 3), and the third used 79 cases (identified as Model 4). Models 1 and 3 had power of 1.0. Model 4 had power of .80. Power at .80 and above is considered adequate for detecting significant relationships if they exist (Hair, et al, 1998; Sloper, 2007).

The first model used 12 predictors to explain the dependent variable ‘weeks of breastfeeding duration’ with data from both breastfeeding initiating mothers and formula feeding only mothers. As both groups of mothers were included in Model 1, the model captures factors that influence ever starting breastfeeding, as well as the duration of breastfeeding once it is started. This model accounted for approximately 39% (R Square .45; Adjusted R Square .392) of the variance in the breastfeeding duration of the majority of the sample [ $F(12,114) = 7.772, p \leq .001$ ]. Summary of the regression model follows in Table 9. Significant predictors are highlighted. This model shows four significant predictors and two more predictors approaching significance. Two of the significant predictors were negatively related to breastfeeding duration (weekly time at work/school, and public breastfeeding discomfort). Two of the significant predictors were positively related to breastfeeding duration (personal encouragement of feeding choice by partner/primary support person, and level of education). Professional encouragement of breastfeeding and other culture approached significance as well.

Table 9.

*Model 1: Multiple Regression of Factors Predicting Breastfeeding Duration (N =127)*

Predictor	Unstandardized Coefficients		Standardized Coefficients		p-Value
	B	Std Err	β	t	
<u>Social Support Variables:</u>					
Personal Encouragement	1.257	.495	.207	2.539	.012*
Professional Encouragement	.901	.501	.156	1.798	.075
Total Role Models	.138	.218	.056	.634	.527
<u>Work Variable:</u>					
Weekly Time at Work/School	-.073	.034	-.159	-2.141	.034*
<u>Sexual Perception Variables:</u>					
Public Breastfeeding Discomfort	-2.219	.772	-.217	-2.875	.005**
Right to Breastfeed	-.789	.806	-.072	-.979	.330
Concern about Breastfeeding & Sexuality	.357	.818	.032	.437	.663
<u>Demographic Variables:</u>					
Married/Partnered	.711	1.549	.038	.459	.647
African American	-.457	1.535	-.024	-.298	.766
Other Culture	4.253	2.276	.155	1.869	.064
Educational Level	1.576	.478	.264	3.300	.001***
Age	.184	.130	.109	1.416	.159

p &lt; .05; \*\* p &lt; .01; \*\*\* p &lt; .001

To test if mothers who never initiated breastfeeding were different in some ways from those who did initiate, logistic regression analysis was used. Logistic regression is an analysis that allows us to predict the odds of membership in a particular group. Logistic regression was used to model explanation for the nominal dependent variable breastfeeding initiation. The same predictor variables were used in this analysis as were used in the Model 1. However, the work location variable was kept in this model in order to test the impact of mothers' ability to stay at home with their babies. All cases with complete values were used. To assess the possibility that recruiting site impacted

breastfeeding initiation, phi was obtained for the association between the recruiting site variable and breastfeeding initiation.

Table 10.

*Association of Recruiting Site and Breastfeeding Initiation (N=140)*

		Value	Approx. Sig.
Nominal by Nominal	Phi	.218	.465
N of Valid Cases		140	

The Phi value .218 indicates weak association; therefore, there was not a need to control for recruiting site in the logistic regression analysis.

The overall logistic regression model was shown to be significant ( $p \leq .001$ ) by the chi-square omnibus tests for model coefficients. The Hosmer and Lemeshow test also showed the model to be a good fit for the data with a significance of .583. It is desirable for the Hosmer and Lemeshow test to be  $>.05$  in order to *accept* that there are differences in probable group membership based on the model. Finally, Nagelkerke R Square, a pseudo multiple R measure that shows strength of odds prediction on a scale similar to multiple R, was .420. In other words, the overall logistic regression model explains approximately 42% of the observed difference in odds of initiating breastfeeding for this sample. Table 11 on the following page presents the individual variables and their individual significance in the model. Significant variables are highlighted.

Table 11.

*Model 2: Logistic Regression Model for Predicting Odds of Breastfeeding Initiation (N=125)*

Variables in Equation	Log of Odds					Exponentiated Beta	95.0% C.I. for EXP(B)	
	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
<u>Social Support:</u>								
Personal Support	.140	.174	.645	1	.422	1.150	.818	1.616
Professional Support	-.007	.169	.002	1	.965	.993	.713	1.383
Total Role Models	.219	.103	4.480	1	.034	1.245	1.016	1.525
<u>Work:</u>								
Weekly hours at Work or School	-.055	.025	4.721	1	.030	.946	.900	.995
Primarily at home With baby	-1.275	1.035	1.517	1	.218	.280	.037	2.124
<u>Sexual Perceptions of Breastfeeding:</u>								
Discomfort with Public Breastfeeding	-.408	.282	2.093	1	.148	.665	.383	1.156
Right to Breastfeed	-.193	.279	.481	1	.488	.824	.478	1.423
Sexuality & Breast-feeding concerns	-.251	.278	.815	1	.367	.778	.451	1.341
<u>Demographics:</u>								
Married/partnered	-.588	.571	1.060	1	.303	.556	.182	1.701
White			2.510	2	.285			
African American	-.853	.538	2.510	1	.113	.426	.148	1.224
Other Culture	19.578	9085.230	.000	1	.998	31816458.561	.000	.
Education Level	.411	.192	4.570	1	.033	1.508	1.035	2.197
Mother's Age	-.038	.050	.588	1	.443	.963	.873	1.061
Constant	7.523	3028.410	.000	1	.998	1849.660		

Interestingly, the individually significant variables in the logistic analysis for odds of initiating breastfeeding differed somewhat from those that were significant in the regression explaining breastfeeding duration. Here, the total breastfeeding role models variable were significant. More breastfeeding role models increased the odds of breastfeeding 1.2 times (Exp B= 1.245,  $p \leq .034$ ). Total hours spent away from baby for work or school was a repeat significant variable in this regression, again showing a negative relationship to breastfeeding. Mothers spending greater hours away from baby for work or school had decreased odds of breastfeeding initiation (Exp B= .946,  $p \leq .030$ ). The second work variable indicating that mother was primarily at home with baby rather than away from home, did not turn out to be significant. Although it is interesting to note that it was not moving toward showing any increase in odds of breastfeeding initiation for mothers in this sample who were primarily at home with their babies. The only demographic variable that ended up a significant predictor was mothers' education level, which echoed education as a significant predictor in Model 1. A higher education level increased the odds of initiating breastfeeding 1.5 times (Exp B= 1.508,  $p \leq .033$ ) for mothers in this sample. None of the sexual perceptions of breastfeeding factors were significant predictors of the odds of initiating breastfeeding.

The differences in Model 1 and Model 2 suggest that understanding factors predicting longer durations of breastfeeding may be better modeled without including data from mothers who only formula fed their babies. Therefore, another linear multiple regression analysis was modeled (Model 3) to explain the dependent variable breastfeeding duration. Model 3 was set with the same predictors as Model 1, but run

only for those mothers who had initiated breastfeeding, leaving out those mothers who only formula fed their infants. This model examined factors influencing how long a mother who started breastfeeding continued to breastfeed her baby. Post hoc power calculation for this model was also equal to 1.00, indicating adequate power even though fewer cases could be included in the model.

Table 12.

*Model 3: Multiple Regression of Factors Predicting Initiators' Breastfeeding Duration (N = 82)*

Predictor	Unstandardized Coefficients		Standardized Coefficients		p-Value
	B	Std Err	β	t	
<u>Social Support Variables:</u>					
Personal Encouragement	1.156	.647	.188	1.786	.078
Professional Encouragement	1.363	.673	.224	2.023	.047*
Total Role Models	-.105	.248	-.045	-.425	.672
<u>Work Variable:</u>					
Weekly Time at Work/School	-.027	.046	-.055	-.590	.557
<u>Sexual Perception Variables:</u>					
Public Breastfeeding Discomfort	-2.950	1.261	-.234	-2.339	.022*
Right to Breastfeed	-1.042	1.132	-.090	-.921	.361
Concern about Breastfeeding & Sexuality	2.104	1.149	.176	1.832	.071
<u>Demographic Variables:</u>					
Married/Partnered	4.534	2.002	.245	2.265	.027*
African American	1.703	2.019	.084	.844	.402
Other Culture	2.297	2.418	.100	.950	.345
Educational Level	1.465	.576	.256	2.542	.013*
Age	.218	.166	.133	1.307	.195

p < .05; \*\* p < .01; \*\*\* p < .001

Model 3 was slightly more explanatory than Model 1, explaining approximately 41% (R Square .499; Adjusted R Square .411) of the variance in breastfeeding duration for these mothers [ $F(12, 69) = 5.719$   $p \leq .001$ ]. There were interesting shifts in which

predictors were significant for the mothers in this model as compared with the first model suggesting that different factors may influence a mother's choice to breastfeed, compared to her choice to continue breastfeeding once she has started. The time at work variable was no longer significant. The factor variable *discomfort with public breastfeeding* had slightly increased explanatory power in the model for these mothers all of whom had actual experience with breastfeeding. Professional encouragement was significant in this model while personal encouragement was no longer significant. Perhaps because all of these mothers had initiated breastfeeding professional encouragement was more necessary for them. Mother's educational level remained a significant predictor in the model. However, a second demographic factor, married or partnered, also became significant.

The American Academy of Pediatrics (2005) currently recommends that infants be exclusively breastfed for the first six months of life. As presented earlier, exclusive breastfeeding rates in this sample fell far short of this idealistic recommendation. As planned, regression analysis was also used to model the same predictors for exclusive duration of breastfeeding. In this regression, also run for only mothers who had initiated breastfeeding and had exclusive duration values, the overall model explained approximately 20% (R Square .324; Adjusted R Square .201) of the variability in exclusive breastfeeding duration [ $F(12,66) = 2.633$   $p \leq .006$ ]. However, no individual predictors reached significance.

Table 13.

*Model 4: Multiple Regression of Factors Predicting Initiators' Exclusive Breastfeeding Duration (N = 79)*

Predictor	Unstandardized Coefficients		Standardized Coefficients		
	B	Std Err	β	t	p-Value
<u>Social Support Variables:</u>					
Personal Encouragement	.885	.635	.172	1.394	.168
Professional Encouragement	1.118	.661	.220	1.691	.096
Total Role Models	-.194	.245	-.096	-.789	.433
<u>Work Variable:</u>					
Weekly Time at Work/School	-.039	.045	-.095	-.851	.398
<u>Sexual Perception Variables:</u>					
Public Breastfeeding Discomfort	-1.605	1.243	-.154	-1.291	.201
Right to Breastfeed	-.322	1.134	-.033	-.284	.777
Concern about Breastfeeding & Sexuality	1.030	1.127	.104	.914	.364
<u>Demographic Variables:</u>					
Married/Partnered	2.701	1.965	.173	1.375	.174
African American	-.482	2.008	-.028	-.240	.811
Other Culture	1.205	2.418	.060	.498	.620
Educational Level	.838	.569	.175	1.474	.145
Age	.210	.165	.154	1.279	.205

p < .05; \*\* p < .01; \*\*\* p < .001

Post hoc power calculation for this model was .80, which is the lowest power generally considered adequate to show a relationship (Hair, et al, 1998; Sloper, 2007) if one exists.

It is unclear if the lower R and lack of significance of the variables point to different factors influencing the duration of breastfeeding among those who exclusively breastfeed as compared with those who breast and formula feed, or if the findings are a function of the small sample size. Studies with more power may be needed to clarify variables explaining exclusive breastfeeding.

### Summary of Quantitative Analysis

Did study results support study hypotheses? Three main study hypotheses were proposed at the beginning of the study. Hypothesis 1: Mothers who perceive higher levels of social support for breastfeeding will have higher breastfeeding initiation and duration rates. Hypothesis 2: Mothers with higher perceived sexual perceptions of breastfeeding will have lower breastfeeding initiation and duration rates. Hypothesis 3: Mothers who need to spend greater time apart from their infants (with shorter maternity leaves, and greater number of hours spent at work or school) will have lower breastfeeding initiation and duration rates. Models demonstrated that there were differences in the factors that predicted ever starting breastfeeding (initiation) as opposed to factors predictive of the duration of breastfeeding for those mothers who chose to breastfeed.

Results demonstrated support for hypothesis 1. Model 2, the logistic regression model, showed that higher total number of breastfeeding role models among friends and family increased the odds of initiating breastfeeding 1.2 times for this sample of mothers. Linear multiple regression Model 1 showed that mothers' report of personal encouragement from their partner or primary support person was a significant predictor of breastfeeding duration when both initiating and formula feeding mothers were considered together. Linear multiple regression Model 3 showed that professional encouragement of feeding choice became a significant predictor of breastfeeding duration for mothers who had initiated breastfeeding. And, Model 3 also showed that being

married/partnered was an additional predictor variable of breastfeeding duration for initiating mothers.

Results demonstrated only partial support for hypothesis 2. *Discomfort with public breastfeeding* was not a significant predictive factor in model 2 for increasing the odds of breastfeeding initiation in this sample. However, in models 1 and 3, linear multiple regression analysis found this first factor from the sexual perceptions of breastfeeding scale: *discomfort with public breastfeeding* to be negatively related to sample mothers' breastfeeding duration as hypothesized. The second two factors from the sexual perceptions of breastfeeding scale did not become significant predictors in any of the models.

Results also demonstrated some support for hypothesis 3. In Model 1, time away from baby for work or school was significantly and negatively related to participants' breastfeeding duration. In Model 2, increased time away from baby for work or school was also a significant predictor with a negative relationship to the odds of initiating breastfeeding for study mothers. In Model 3 which modeled the sub-set of mothers who did initiate breastfeeding, time away for work was no longer a significant predictor of breastfeeding duration. The impact of maternity leave time was not explored in the analysis models due to multicollinearity concerns. It is of note, that model 2 did not find mothers who primarily stay at home with their babies to have increased odds of initiating breastfeeding. Some mothers in this sample did not initiate breastfeeding despite being primarily at home with their babies; while other mothers who had paid employment did choose to breastfeed.

### Qualitative Findings

Short answer questions in the interview protocol/questionnaire gave mothers the opportunity to name their experience in their own words. Qualitative research can help establish descriptive understanding (Huberman & Miles, 1998). While the responses in this section cannot be generalized beyond the unique experience of the mothers who provided the answers, they are presented here for the purpose of describing mothers' choice experiences more richly. This additional qualitative information may also provide guidance for future research in this area to the extent that mothers identify variables important to their breastfeeding choices that were not accounted for in the multivariate regressions. Such variables may help to account for the unexplained variance of the quantitative models.

Eighty-eight participants who had attempted breastfeeding at least one time provided answers to the question: "What are (were) your main reasons for breastfeeding?" Table 14 identifies mothers' answers to this query.

Table 14.

*Mothers' Reasons for Choosing to Breastfeed (n=88)*

Reason Given	Frequency	Percent	Cumulative %
"it's best for the baby"	55	62.5%	62.5%
for "immune protection for baby"	11	12.5%	75.0%
for "bonding with baby"	8	9.0%	84%
"wanted to lose weight"	3	3.4%	87.4%
"it's family tradition"	3	3.4%	90.8%
"breastfeeding is natural"	3	3.4%	94.2%
because premature baby needed help for growth	2	2.3%	96.5%
for "convenience"	1	1.1%	97.6%
"it's cheaper"	1	1.1%	98.7%
"just to experience it"	1	1.1%	100%

One hundred and twenty one participants provided a short answer to the question: "What are (were) your main reasons for formula feeding? Many of the answers mothers provided for this question were their reasons for not breastfeeding or for choosing to stop breastfeeding. These answers provide another view of factors constraining mothers in this sample from choosing and continuing to breastfeed. As there were so many answers, an analysis process of constant comparison was used where answers were lumped and sorted into like categories (Glaser & Strauss, 1967; Strauss & Corbin, 1990). The named

categories (themes) emerging from this process offer an adjunctive and multifaceted look at breastfeeding constraints. Table 15 presents the results of the constant comparison analysis for this question with contrasts between reasons given by formula feeding only mothers and mothers who had initiated breastfeeding for at least one week. Results were tallied and are listed from most common to least common.

Table 15.

*Mothers' Main Reasons for Formula Feeding (N=121)*

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Formula Feeding Only (n= 46)      Breastfeeding Initiating (n= 75)

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**Theme 1: Experienced physical problems with a breastfeeding attempt**

Formula Mothers frequency		Initiating Mothers frequency		Totals
1. Insufficient milk supply	2	1. Insufficient milk supply	21	23
2. Latch-on problems	1	2. Latch-on problems	9	10
3. Pain with breastfeeding	2	3. Pain with breastfeeding	4	6
		4. Leaked too much	1	1
		5. Biting started	1	1
		6. Breastfeeding too hard with 1 twins; physical exhaustion.	1	1
		7. Formula made mother more 1 secure about being able to see baby's milk intake.	1	43
				<b>35.5%</b>

Table X. continued

*Mothers' Main Reasons for Formula Feeding (N=121)*


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Formula Feeding Only (n= 46)      Breastfeeding Initiating (n= 75)

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**Theme 2: For reasons related to mother's convenience.**

Formula Mothers frequency	Initiating Mothers frequency	Totals
		21
1. convenience 10	1. convenience 11	2
2. breastfeeding takes too long 1	2. breastfeeding takes too long 1	5
3. smoking mother 5	3. hadn't pumped enough when 3 planning to go out	3
	4. baby liked bottle better 2	2
		<b>33</b>
		<b>27.2%</b>

**Theme 3: For reasons related to mother's personal and/or emotional preferences.**

Formula Mothers frequency	Initiating Mothers frequency	Totals
1. just didn't feel right about breastfeeding. 4	1. just didn't feel right about breastfeeding. 1	5
2. like formula feeding better 3	2. Public b.f. discomfort 2	5
3. didn't want to breastfeed 3	3. More freedom 2	5
4. I really don't have a reason 1 because I think breastfeeding best for babies.	4. Afraid to hold baby 1	2
		17
		<b>14.1%</b>

Table X. continued

*Mothers' Main Reasons for Formula Feeding (N=121)*


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Formula Feeding Only (n= 46)      Breastfeeding Initiating (n= 75)

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**Theme 4: Reason presented as medical advice or interference.**

Formula Mothers frequency	Initiating Mothers frequency	Totals
1. baby lactose intolerant; prescribed special formula 3	1. Prescribed formula due to reflux. 1	4
2. hospital practice interfered 1	2. hospital practice interfered 1	2
3. sick baby would not need to work so hard at breast 1	3. baby couldn't digest milk 1	2
4. not with mother at birth 1	4. for low birth weight baby's weight gain 1	1
	5. dr advised weaning 1	1
	6. mother on medication 2	2
	7. because baby had jaundice 1	1
		14
		<b>11.6%</b>

**Theme 5: For work related reasons.**

Formula Mothers frequency	Initiating Mothers frequency	Totals
1. work 5	1. work 6	11
2. childcare mother needed to use 1		1
		12
		<b>9.9%</b>

**Theme 6: For bonding.**

Formula Mothers frequency	Initiating Mothers frequency	Totals
1. So other family members could bond with baby by giving formula bottle 2		2
		<b>1.6%</b>

Mothers also had opportunity to characterize their experience of their feeding choice. One hundred and thirty six mothers provided a response to the question, “How was your experience with your feeding choice?” With follow up prompts, “did you like or dislike it? Any special problems?” Table 16 presents mothers responses. Mother’s answers to these questions reveal that many of them needed more support or help in order to continue an effort to breastfeed. Only 18% of sample mothers chose to initiate breastfeeding and reported that it went smoothly for them. The rest of the mothers encountered experiences that often prompted them to give up on breastfeeding. This result highlights again the importance of social and professional support to persevere with breastfeeding.

Table 16.

*Mother’s Experience with her Feeding Choice (N=136)*

Formula Feeding Only Mothers(n= 51)			Breastfeeding Initiating Mothers (n= 85)		
	<u>Freq</u>	<u>%</u>		<u>freq</u>	<u>%</u>
Formula use w/o problems	34	24.3	breastfeed w/o problems	25	17.9
Formula use with problems	13	9.3	insufficient milk supply	15	10.7
Regret not breastfeeding;			latch-on difficulty	11	7.9
needed more help	4	2.9	persevere through difficulty	8	5.7
			ambivalence; stopped with regret	7	5.0
			painful breastfeeding experience	6	4.3
			disliked breastfeeding; prefer bottles	6	4.3
			liked breastfeeding for bonding	4	2.9
			disliked being tied down	3	2.1
			Total	85	62.5

### Discouragement of Feeding Choices

Mothers were also asked “has anyone discouraged you in the way you chose to feed your baby?” with the additional explanation “discouraged means suggested you stop or change your choice”. Considering these responses through the lens of Symbolic Interactionism can be helpful. Responses reveal mothers continuing to weigh their infant feeding choices in the context of dynamic social interactions. Perception of the relative merits of each choice per key reference groups and significant others were pivotal considerations. A mother whose infant feeding family tradition was different than the choice she made sometimes received suggestions to change. Many breastfeeding mothers identified perceptions that generalized others in the broader society as less than supportive. A key significant other who disapproved of a choice sometimes prompted mother to assert her Self in relation to the disapproval or moved her towards accommodating her behavior to meet their expectations.

Forty mothers detailed experiences of being discouraged from the choice they were inclined towards. Nine mothers identified that they were encouraged by a support person to breastfeed instead of formula feed. Five more mothers identified being encouraged to continue breastfeeding when they had decided to stop. Examples of these follow. Each quote is preceded by mother’s marital status, race, age and length of breastfeeding for youngest baby.

This married Caucasian mother, 24 years old, breastfed baby for 4 months talks about her husband.

“He wanted me to do everything natural and was very upset when I started to use formula. I guess because his mother breastfed everyone.”

Another married Caucasian mother, 28 year old, who was still breastfeeding a 7 month old talks about her experience with her husband.

“Now, I think he’s glad I breastfeed but during the hard times for me he thought formula would be easier so someone else could help. He meant well—wanted someone else to be able to feed so I could get some sleep. It was bad for awhile. But I didn’t want to give up until at least 4 months and by then it was easy.”

A divorced Caucasian mother, 32 years old, breastfed her first baby 1 week and her second baby four months. Here she reveals her reasons for weaning in spite of perceiving disapproval.

“I felt like maybe the WIC clinic questioned my choice to wean. They seemed very supportive while I was breastfeeding. I guess they have to do that. I didn’t like breastfeeding at all, felt like she was too dependent on me. There was no soreness or cracked nipples. I felt overwhelmed so I weaned her.”

A married Caucasian mother, 25 years old, didn’t breastfeed first baby, then breastfed second baby 7 months, and encountered a latch-on problem with third baby who she breastfed 4 weeks with poor weight gain. Here she also talks about her choice in spite of perceived disapproval.

“My baby had a bubble on roof of her mouth, the nipple wouldn’t reach back far enough to have the baby get enough milk. The lactation consultant didn’t want me to stop...you know you got the post-partum blues going on and she didn’t seem to understand... I needed to get that stress off of me.”

Some mothers identified their sense of the “generalized other”, the broader society view towards breastfeeding as disapproving. This married Caucasian mother, 25 years old, was continuing to breastfeed her seven month old.

“People would tell me that breastfeeding is not that important, but it was important to me.”

This African Immigrant mother, 28 years old, was still breastfeeding her 18 month old and expressed surprise with the negative attitudes towards breastfeeding expressed by new American friends.

“They said breastfeeding was nasty and painful!”

Other mothers identified comments and omissions made by support people that pushed them towards formula feeding instead of the breastfeeding route they had chosen. Discouraging experiences and advice were attributed to various support persons personal and professional. This married Caucasian mother, 21 years old, didn’t breastfeed first baby following an experience with birth complications from toxemia.

“I received no encouragement or useful advice. I wanted to breastfeed but was unable to...couldn’t sit up due to spinal headache, no help pumping in hospital, 6 days in hospital... was told to pump and dump due to multi-medications but no help to show me how. My milk dried up. It didn’t produce due to lack of stimulation and help to pump.”

This single Caucasian mother, 20 years old, breastfed first baby two weeks.

“I wanted to, but eventually I couldn’t. I didn’t develop enough breastmilk to satisfy my son. Was told to continue to give him what little breastmilk I could and supplement with formula. After two weeks all my milk disappeared and I had to rely totally on formula. I was very upset that I couldn’t breastfeed, so I was not very happy about formula feeding.”

This single Caucasian mother, 19 year old, breastfed her baby two and half months.

“He [the baby] was very constipated and his doctor said he was protein sensitive and I should stop breastfeeding and change to formula right away. Said I was drinking too much milk for the baby to tolerate. She [the pediatrician] did not suggest I change what I was eating.”

Some mothers were successful despite the advice they got. This married Asian American mother, 24 years old, was continuing to breastfeed her six month old.

“According to her, my baby’s doctor, baby wasn’t getting enough milk and needed formula. But I had a difference of opinion and kept breastfeeding. I did try to give formula once or twice but he really didn’t like it and didn’t take very much, so I just kept breastfeeding.”

Intimate family relationships were also revealed by mothers’ responses. Some mothers were very influenced by significant others. This is what a single African-American mother, 18 years old, who never breastfed said about her boyfriend.

“He didn’t want me to breastfeed because then the baby may be more attached to me.”

This married 24 year old African immigrant mother who had breastfed two older children past fourteen months talks about the feeding decision that was made for her youngest baby born soon after coming to the United States.

“He [her husband] was the one that said we should give the baby formula, then I wouldn’t have to leak milk on everything. He said the formula was good because the baby gained a lot of weight. We were happy with the formula.”

Other mothers noted their family members’ opinions but didn’t follow them. This married African American mother, 36 years old, who was still breastfeeding a 6 month old, talks about her mother-in-law.

“She would always be thinking that the baby not getting enough milk but I didn’t listen to her and I kept breastfeeding all seven of my children.”

Another single African American mother, 24 years old, who was still breastfeeding her 6 month old talks about her mother’s comments.

“She was always telling me some people might not understand it. Always telling me I need to put her on formula so I can leave her with someone besides myself.”

A married Caucasian mother, 32 years old, still breastfeeding her 9 month old and working full-time talks about her mother and sisters concern for her in contrast to her own perception of her breastfeeding.

“They continue to tell me that I should rest, that it is too much to continue to breastfeed. Also, that the baby is teething... They make these remarks out of concern for my well-being. I know that nursing the baby is good for both of us. I also find it soothing and a stress relieving activity.”

Other family members felt free to strongly question a mother’s decision. This African American mother, 24 years old, breastfed her older daughter two years and was still breastfeeding an eight month old and working full-time at the time of her interview.

“My sisters would say stuff that might make a weak-minded person feel uncomfortable or ashamed of breastfeeding. Like ‘you’re going to take out your bosom and feed your baby in the mall? It’s going to upset everyone if you do that.’ And ‘Doesn’t that feel awkward or gross? How can you sit there and let the baby suck on your breasts?’”

### Encouragement of Breastfeeding

Mothers were also asked who their important support people were, and how they encouraged their feeding choice. Some of mothers’ positive experiences of encouragement of breastfeeding are presented here.

A single Caucasian mother, 28 years old, formula fed her first and second children, but breastfed her third baby three months. Here she talks about her experience of support.

“A nurse at the hospital was very caring and helped get us going, and then we had no problem. She encouraged me to keep up the good work.”

A single Black mother, 24 year old, still breastfeeding her 6 month old daughter talks about her breastfeeding support from a nurse and a lactation consultant in the hospital.

“They told me how to latch on and the best position and how long, ten minutes equals 2 ounces. A lot of advice to get started. To not get frustrated and just keep trying. At first I thought I’d give her a bottle. But they were so happy they made me feel that I made a really good choice to breastfeed. That was comforting to me”

This single Black mother, 20 years old, who breastfed her baby for 2 months, speaks about encouragement from her doctor.

“He would tell me I was doing great with my baby and [that] I was a great mother.”

This single Black mother, 22 years old, who breastfed her baby 5 months spoke about her own mother’s encouragement.

“She breastfed all three of us. She showed me what to do. She said to stay calm and relaxed and showed me the right way to hold her. If you calm down able to have milk come. The majority of the time she was right.”

This married Caucasian mother, 25 years old, was still breastfeeding her 7 month old. She spoke about help from a doctor, nurse, lactation consultant and her mother.

“I used them more for information than encouragement. They showed me how to hold the baby, what’s normal,

helped me feed her the first few times. But I had to just keep trying and trying till we both learned how. We had to figure out our own system that worked for us.”

### Synthesizing Results

The combination of multiple empirical methods in a single study is best understood as a strategy to add breadth and depth to any investigation (Flick, 1992, p. 194). As summarized earlier, quantitative results did support, at least in part, the three main study hypotheses. These hypotheses were posited by the researcher from knowledge of the scholarly breastfeeding literature as well as her own embodied breastfeeding knowledge from experience. The hypotheses thus reflect the researcher’s own standpoint (Smith, 1987). How the quantitative and qualitative results fit together or diverge is a remaining question.

Study participants also gave reasons in their own words for their infant feeding choices. One would expect that mothers would also bring social support, work, and sexual perceptions of breastfeeding forward in their own explanations of their breastfeeding choices if these variables were indeed major constraints on these mothers’ choices to breastfeed. Indeed, one support for the validity of the quantitative results is the presence of similar thematic data within the qualitative results. This researcher recognizes research as an interactive process shaped as Denzin and Lincoln (1998) identify by personal history, gender, social class, race, and ethnicity. A strength of having both quantitative and qualitative data is the ability to triangulate the results of one method in the results of the other. Mirrored results in both methods confirm consensus

on some variables. Qualitative results not reflected in the quantitative results may point towards important variables that were omitted from consideration in the multivariate models. Seeing what may have been left out suggests variables that should be explored in future studies. Likewise quantitative results not mirrored in the qualitative data may point to factors participants were either unaware of, didn't wish to disclose, or that were perceived and named in a different manner.

In the quantitative analyses, three different regression models using similar combinations of variables (measuring demographic variables and social support, work, and sexual perceptions of breastfeeding) each explained less than half of the variation in mothers' initiation and duration of breastfeeding choices. Model 1 explained approximately 39%. Model 2 explained approximately 42%. And, Model 3 explained approximately 41%. While these models showed variables were significant, there was still a greater portion of the variance in mothers' choices left unexplained. The themes that emerged from constant comparative analysis of mothers' own stated reasons for choosing formula instead of breastfeeding (whether they chose formula from their babies' birth or following weaning from the breast) revealed overlaps and omissions as compared with the quantitative variables. Constraint themes identified by mothers' include those listed in Table 17.

Table 17.

*Constraint Themes Identified by Mothers (N= 121)*


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Theme 1: Experienced physical problems with a breastfeeding attempt.	35.5%
Theme 2: For reasons related to mother's convenience.	27.2%
Theme 3: For reasons related to mother's personal and/or emotional preferences.	14.2%
Theme 4: Reason presented as medical advice or interference.	11.6%
Theme 5: For work related reasons.	9.9%
Theme 6: For other family members' bonding.	1.6%
	100 %

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Contrast of results from both methods shows that mothers' report of physical problems with a breastfeeding attempt, as well as medical advice and/or interference were variables not adequately accounted for in the quantitative analyses. Forty-seven percent of participating mothers' formula use reasons fell into those two thematic categories. In future studies, more fully explanatory multivariate models may be found if physical problems with a breastfeeding attempt and medical advice variables are included in the model.

Mothers did name work as a breastfeeding constraint. Several mothers also named their discomfort with public breastfeeding (in the qualitative results those responses were included in the mother's personal and/or emotional preference theme) as a barrier. Interestingly, no mothers identified that their *main* reason for not breastfeeding, or for weaning, was not having enough support for breastfeeding. However, some mothers' accounts of their feeding choice experiences revealed lack of personal and professional support for a breastfeeding attempt. Further implications of both the

quantitative results and of mothers' qualitative perspectives will be discussed in detail in the next chapter.

## CHAPTER 5 Discussion of Implications

### Introduction

As the scientific case for the health benefits of breastfeeding is well established, increasing breastfeeding rates in the United States has been identified as a major public health goal. Prior research has identified constraints on the practice of breastfeeding. In the United States this includes the perception of women's breasts as sexual rather than nurturing (Blum, 1993, 1999; Palmer, 1995), the belief that breastfeeding in public spaces is inappropriate (Bentley, Dee, & Jensen, 2003; Stearns, 1999; Li, Fridinger, & Grummer-Strawn, 2002), the difficulty of combining paid work with breastfeeding (Fein & Roe, 1998; Kirkland & Fein, 2003; Lindberg, 1996; Raisler, 2000) and cultural attitudes that assume formula feeding as the acceptable social norm (Blum, 1999; Bryant, 1992; Fildes, 1986; Scott & Mostyn, 2003). Breastfeeding is a health disparity issue, with the lowest breastfeeding rates found disproportionately among low income groups. Knowledge of constraints on the choice to breastfeed is relevant to helping society meet breastfeeding targets articulated by Healthy People 2010 (Department of Health and Human Services, 2001).

This project examined impacts of sexual perceptions of breastfeeding, social support, and work on breastfeeding choices made by a sample of low income mothers. The discussion in this chapter will synthesize and reiterate study findings, relate results to

findings of other studies, identify implications for social work practice, delineate study limitations, and highlight contributions that further the breastfeeding knowledge base, particularly for low-income mothers.

### Synopsis of the Dissertation

This dissertation employed a cross-sectional survey design utilizing mixed methods to examine potential barriers to breastfeeding experienced by a random sample of mothers served by the federal nutrition support program WIC (Women, Infants, and Children) in a geographically central region of Virginia. One hundred and forty mothers identified their infant feeding choices in their babies' first six months. They answered questions about positive and negative breastfeeding experiences related to social support, work, and their attitudes regarding public breastfeeding and sexual perceptions of breastfeeding. The creation of a scale to measure sexual perceptions of breastfeeding is a primary contribution of the study. Social support, work, and sexual perception variables as well as demographic variables were used in logistic and linear regression models to explain mothers' breastfeeding initiation and breastfeeding duration choices. Further, mothers also expressed their perspectives on breastfeeding choices and experiences in their own words through open-ended questions in the survey/interview.

While even one day of breastfeeding has been identified as beneficial (National Childbirth Trust, 2007), the health benefits of breastfeeding for both babies (AAP, 2005; Lawrence, 2000) and mothers (AAP, 2005; Labbok, 1999; 2000) increase with longer term breastfeeding. The American Academy of Pediatrics (1997; 2005) recommends that babies be breastfed exclusively for the first 6 months, that breastfeeding continue to baby's first

birthday and for as long after this as is mutually agreeable to mother and child. This study considered initiation and duration of breastfeeding for mothers in the sample as the dependent variables in the multivariate regressions.

### Synthesizing Social Support Findings

Hypothesis 1 posited that mothers who perceived higher levels of social support for breastfeeding would have higher breastfeeding initiation and duration rates. Support for hypothesis 1 was found quantitatively. A higher total number of breastfeeding role models among friends and family was shown to increase the odds of initiating breastfeeding for this sample of mothers. Notably, higher total number of breastfeeding role models was not a significant predictor of breastfeeding duration. Mothers' report of encouragement from their partner or primary support person was a significant predictor of breastfeeding duration when both formula feeding and breastfeeding initiating mothers were considered in the model. Professional encouragement of feeding choice became a significant predictor of breastfeeding duration for mothers who had initiated breastfeeding, reflecting the importance of the more authoritative technical assistance that professional helpers may supply as important for continuing breastfeeding once it is initiated. These results suggest that women were more likely to try breastfeeding, even briefly, if they had more breastfeeding role models and if they have personal encouragement, but personal encouragement and role modeling may not be enough to keep attempts going when mothers encounter breastfeeding issues. That observation brings focus back to what social support breastfeeding mothers need.

While no mothers' identified a lack of social support as their main reason for not breastfeeding or stopping breastfeeding; lack of support experiences showed up when mothers identified their feeding choice experiences. Qualitative results showed a conspicuous need for assistance with breastfeeding (see Table 16, p. 134 in Chapter 4). Of the 136 mothers who characterized their feeding choice experience, only 18% of the total sample chose breastfeeding and reported initiating and continuing to breastfeed without issues. The rest of the initiating mothers reported breastfeeding issues like insufficient milk supply, latch-on difficulty, and physically painful experiences. In contrast, of the 136 mothers who gave answers regarding their choice experiences, 24% used formula without reported problems. Another 8% of the sample (including some initiators and some formula only mothers) identified ambivalence and regret about not breastfeeding or weaning; they needed more help to be successful. At the very least, these results suggest that the initiation of breastfeeding is more difficult for many mothers than simply formula feeding. Many of the breastfeeding issues that mothers perceive as physical problems with breastfeeding indicate mothers' need for knowledgeable help to solve problems. Experiencing pain, having a latch on problem, and believing that there is insufficient milk reflect problems with breastfeeding technique, knowledge, and social or professional assistance. That mothers perceive these issues more as physical problems than as a lack of breastfeeding knowledge or breastfeeding support suggests there may be a perception gap between where many mothers are in their breastfeeding attitudes and where breastfeeding promoters may be. In order to seek help for a problem, a mother needs to first know that breastfeeding by its very nature isn't necessarily painful and inconvenient (Bryant, Coreil,

D'Angelo, Bailey, & Lazarov, 1992). If mothers don't know this then a trial attempt at breastfeeding can just reinforce the attitude that breastfeeding is difficult and not really a practical option. This view is reflected in this 18 year old, single, African American mother's comments about her one week attempt to breastfeed.

“It [breastfeeding] was just too complicated. She didn't really latch on well so I just stopped. It was easier and more convenient for me to just make formula and put it in a bottle.”

Lactation consultation is usually more readily available immediately following a baby's birth in the hospital. When a mother is home with the baby and having difficulty she may not know where to turn unless she is lucky enough to have access to a knowledgeable family member, a breastfeeding peer educator, or knows that such help is available by phone through La Leche League chapters. These results suggest that mothers need more breastfeeding knowledge in order to be successful. Lactation support numbers, with encouragement to call with any concern, should be supplied to mothers before their discharge from the hospital. Some WIC clinics where mothers were selected had breastfeeding peer educators while others did not. Mothers selected from sites with peer educators did not demonstrate significant differences in breastfeeding initiation and duration in this relatively small study. However, the percentage of mothers (36.5% of 136) who reported experiencing breastfeeding issues in this sample reinforces an ongoing need for breastfeeding peer educators in the WIC program.

Concern about not having enough milk was mentioned by 16% of mothers in this study. Insufficient milk concern is a research finding echoed in other studies (Cooke, Sheehan, Schmied, 2003; Hill, 1991; Kirkland & Fein, 2004; Pinkerton & Pribble, 2003;

Schwartz, et al, 2002). Canadian Physician and breastfeeding expert Jack Newman (personal communication, September 25, 2005) maintains that the belief that many women cannot produce enough milk to feed their babies is a myth. According to him:

The majority of women are perfectly capable of producing all the milk their babies need for at least 4 to 6 months, and they can continue producing plenty of milk for months and years as their babies add other foods to their diet. Most women are capable of feeding twins or even triplets, and some women have an overabundance of milk. Only a small number of women truly do not produce enough milk for their babies. Even these women can still breastfeed. Though not exclusively with their own milk (Newman & Pittman, 2000, p. 69).

Because mothers are often unfamiliar with the physiology of breastfeeding (Bryant, 1992; Hill, 1991), they may be unaware of their bodies' ability to rebuild a failing milk supply. Instead of increasing supplementation with formula which may contribute to further loss of milk supply or giving up on breastfeeding altogether mothers need assistance with learning how to work with their bodies to increase milk production. If mothers' primary social support networks (mothers, grandmothers, aunts, women friends) have lost women's breastfeeding wisdom, this information may need to come from professional helpers. Unfortunately, results from this study indicate another gap in breastfeeding knowledge. Most professional helpers do not have the same breastfeeding knowledge and skill that Dr. Newman has developed after helping thousands of mothers successfully breastfeed. Several mothers in this study were advised to supplement more and even wean due to concerns that babies needed more milk. Others were prescribed special and expensive formulas due to concerns with digestion of breast milk.

Breastfeeding advocates counsel that mothers increase their nutrition and liquid intake and increase the time baby is allowed to suckle at the breast in order to rebuild milk supply (Newman & Pittman, 2000; La Leche League International, 2004). According to Dr. Newman, low milk production signals that the baby's latch-on was never ideal. When the mother is helped to improve the baby's latch at the breast, supply will usually improve. He recommends continued breastfeeding with use of a lactation aid (small tube supplying supplemental milk at the breast while baby suckles on the breast) instead of bottle feeding in true cases of insufficient milk (Newman & Pittman, 2000). This strategy insures that the mother's body is stimulated to increase production of her own milk. Prescription of special formulas for lactose intolerance or reflux may not even be necessary. Rather, mothers can be encouraged to experiment with dietary changes (especially with cow's milk consumption) to change their milk's digestibility. Dr. Newman counsels mothers to adjust nursing sessions to accommodate babies' swallowing and digestion when milk ejection is very strong. For intractable cases of digestive difficulty, he recommends actually adding lactase enzyme to pumped breast milk (Newman & Pittman, 2000, p. 195) as a preferential option to formula. The quantitative results found professional support to be a significant predictor of initiating mothers' breastfeeding durations indicating the importance of professional support to breastfeeding success. Unfortunately, as shown by the experiences of mothers detailed in the qualitative results, some professional helpers did not give mothers pro-breastfeeding advice backed up with extensive practical knowledge of breastfeeding technique. Study results suggest that one possible intervention is to increase breastfeeding education for medical support persons. A breastfeeding problem solving

approach like Dr. Newman's assumes that the ideal of exclusive breastfeeding is possible and sought after by the mother. This was not demonstrated by many mothers in this sample. Exclusive breastfeeding rates were very low with 71% of sample mothers using at least some formula by the time their baby was four weeks old.

No mothers in this study re-lactated after having weaned a baby. Indeed, just as most people once assumed that the world was flat, usually mothers and professionals alike assume that weaning is the end of a mother's milk supply. However, the successful breastfeeding experiences of highly motivated women who became mothers through surrogacy and adoption (Katz Rothman, 2000; Newman & Pittman, 2000; Peterson, 1999) prove that it is not necessary to have birthed in order to breastfeed. If non-birth mothers and even grandmothers (Fildes, 1986; Hormann & Savage, 1998) can lactate, then certainly a woman whose milk has simply dried up a few weeks ago can be helped to re-lactate. Some mothers in this study expressed strong disappointment, even grief, when they experienced difficulty with breastfeeding. This thirty year old unmarried but partnered African American mother experienced a latching issue during her one day attempt with breastfeeding.

"I do believe it is healthier for children to have breastmilk versus formula milk. I wanted a special bond with my baby. He [her partner] had to help keep me emotionally stable because it hurt so bad when I couldn't breastfeed."

Although other mothers expressed similar disappointments with not breastfeeding, re-lactation did not even come up as a consideration. As breastfeeding may be important enough to some mothers to make the effort, and the superior health benefits to babies and mothers are certainly worth it, assistance with re-lactation should become more commonly

encouraged by professionals. Accounts of successful re-lactation experiences are easily available (Hormann & Savage, 1998; Newman & Pittman, 2000). Simply using a Google search on-line will retrieve multiple accounts.

### Synthesizing Sexual Perceptions Findings

Hypothesis 2 posited that mothers with higher perceived sexual perceptions of breastfeeding would have lower breastfeeding initiation and duration rates. Sexual perceptions of breastfeeding are mostly reflected in the breastfeeding literature in qualitative studies (Bentley, Dee, & Jensen, 2003; Blum, 1999; Bryant, 1992; Carter, 1995; Dykes, Moran, Burt, & Edwards, 2003; Guttman & Zimmerman, 2000; Libbus, Bush, & Hockman, 1997; Raisler, 2000; Scott & Mostyn, 2003; Stearns, 1999). One of the main contributions of this study is the design of an instrument to begin to consider the impact of sexual perceptions quantitatively. Factor analysis of the sexual perceptions of breastfeeding scale yielded three factors. The first factor: *discomfort with public breastfeeding*, emerged as the largest factor with eleven items and was the only factor found to be a significant predictor in linear regression models explaining breastfeeding duration. The factor was found to be negatively related to duration as hypothesized. *Discomfort with public breastfeeding* was not a significant predictive factor relating to odds of breastfeeding initiation for mothers in this sample. This may suggest that discomfort with public breastfeeding did not keep mothers from deciding to try breastfeeding, but it did impact how long they persevered with breastfeeding if they did initiate it. Factor 2 *right to breastfeed* and factor 3 *concerns about breastfeeding and sexuality* were not significant predictors in any of the regression models. However, when

mean differences between formula feeding mothers and breastfeeding initiating mothers were tested, formula feeding mothers did show increased sexual perceptions on all three factors. These differences were not statistically significant on factor 2 *right to breastfeed*, but differences were significant for the other two factors. The Sexual Perceptions of Breastfeeding scale needs further refinement in additional studies. Both factors 2 and 3 were represented by only three items. Measurement sensitivity may increase with the addition of more items representing these concepts.

Qualitative results in this study also mirror sexual perceptions of breastfeeding as a constraining concern of mothers in the study. Several mothers referred to “not feeling right about breastfeeding” or “being uncomfortable with breastfeeding” in their feeding choice experiences. Such a view is expressed by this 22 year old, unmarried but partnered White mother who chose to formula feed.

“My mother tried breastfeeding when she was young but felt uncomfortable. Health was most important to me. But breastfeeding just made me feel uncomfortable, and most babies grow up just as healthy on formula.”

Sexual perceptions were not alluded to as frequently as I would have expected. Perhaps this reflects the general reticence that mothers may have felt to discuss sexuality. It appeared that more mothers could reveal sexual attitudes with less embarrassment in the structured format of the scale than by bringing the topic up on their own in the open ended qualitative queries. Mothers also revealed sexual perceptions of breastfeeding held by others as they talked about their experiences with discouragement of their feeding choice (see pages 135 to 139 in Chapter 4). Interestingly, some mothers responded to family

members' disapproval or discomfort with breastfeeding with strengthened resolve to continue their breastfeeding. That self assertive impulse may correlate with factor 2 *right to breastfeed* from the sexual perceptions of breastfeeding scale. While this sample did not demonstrate significant mean differences between formula feeding and breastfeeding initiating mothers on *right to breastfeed* it would be interesting to know how general population samples might measure on this concept. Refinement of the sexual perceptions of breastfeeding scale in future studies can continue to build knowledge of how sexual perceptions interact with not only breastfeeding choices but with general social attitudes regarding breastfeeding.

### Synthesizing Work Findings

Hypothesis 3 posited that mothers needing to spend greater time apart from their infants for work or school (with shorter maternity leaves, and greater number of hours away from baby) would have lower breastfeeding initiation and duration rates. The primary empirical finding from other research studies concerning working mothers and breastfeeding is that the intention to return to a job does not hinder initiation of breastfeeding but does hinder duration of breastfeeding (Auerbach & Guss, 1984; Fein & Roe, 1998; Lindberg, 1996; McKinley & Hyde, 2004; Roe, Whittington, Fein, & Teisl, 1999; Ryan & Martinez, 1989; Visness & Kennedy, 1997a). It is notable that the majority of mothers in these studies were of higher socio-economic means.

Results regarding breastfeeding and work were mixed for this low income sample of mothers. Quantitative results showed "time away for work" to be a significant variable decreasing the odds of initiating breastfeeding. This deviates from most of the research on

work and breastfeeding alluded to in the studies above. It is a finding more in line with Kimbro's (2005) fragile families' data finding that low income mothers who expect to work in the first year after their babies' birth have decreased odds of breastfeeding initiation. When explanation of breastfeeding duration was tested, linear multiple regression also found "time away for work" to be a significant and negative predictor of breastfeeding duration when mothers from both groups were considered together. Personal encouragement from a partner or primary support person was also significant to duration in this model. However, when only breastfeeding initiating mothers were used in a second model "time away for work" no longer had a significant impact on breastfeeding duration. Interestingly, at the same time being married or partnered rather than single became a significant predictor in the model. The difference in these two models reinforces that the "time away for work" variable relates more to decreased probability of breastfeeding initiation rather than to breastfeeding duration in this sample. There is also a suggestion that personal encouragement supports mothers in initiating breastfeeding while being married/partnered helps mothers maintain longer breastfeeding durations. Perhaps another parent's availability to help with income earning and domestic work frees the mother for more flexibility in how she combines breastfeeding with a job.

In the qualitative data, work was readily identified by mothers' as a reason for not breastfeeding. However, it was named by only 9% of study mothers as the main reason for a choice to use formula. Another question in the interview asked mothers to identify which feeding choice is the most difficult to combine with a job. Interestingly, mothers in both groups almost unanimously named breastfeeding as the most difficult feeding option

to combine with a job. As is demonstrated by the cross tabulation in Table 18, mothers identified combining breastfeeding with work as the most difficult option regardless of whether or not they were in the workforce. Phi for the table was .063 ( $p = .466$ ) showing no association between these variables, and suggesting other

Table 18.

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*Cross tabulation: Currently in Workforce and Feeding Choice  
most difficult to combine with a job (N = 136)*

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		is the most difficult to combine with a job		Total
		breastfeeding	formula feeding	
Currently in Workforce	no	65	3	68
	yes	63	5	68
Total		128	8	136

variables as more important. It is possible that it is so well accepted that working and breastfeeding is difficult that work is seen as a more socially acceptable reason for not breastfeeding. Mothers are aware of breastfeeding as a mothering ideal (Guttman & Zimmerman, 2000; Wall, 2001). Social desirability may have prompted mothers in this sample to cloak other reasons for not breastfeeding with the work reason.

While a larger portion of mothers in the sample showed decreased probability of initiating breastfeeding in anticipation of a return to work as hypothesized, a small portion of the sample actually defied the odds and experienced some success with breastfeeding while working. The small subset ( $n = 19$ ) of mothers who combined breastfeeding with work demonstrated relatively extended breastfeeding duration (mean = 20 weeks). This group represented 13.6% of the total sample, and 31% of sample working mothers. This

group of mothers probably kept the variable “time away for work” from being a significant predictor of breastfeeding duration for those mothers who had initiated breastfeeding. This group’s 20 mean weeks of breastfeeding duration compared to 10.9 mean weeks duration for other sample working mothers. When I investigated whether this group of mothers was different from the rest of the sample in other ways, I discovered important differences. Only half of them worked more than 35 hours a week as compared to 73% of other sample working mothers. As a group they had 14.2 mean years of education compared with 12.3 years for the total sample. This suggested that these mothers generally may have held job roles requiring more education. In fact, of the mothers who combined breastfeeding and work, 7 worked in the medical field, 5 worked in the education field, 2 had office support positions, and the remaining 5 worked respectively in sales, as a caterer, as a baker, as grounds keeper, and as a UPS supervisor. Perhaps these mothers enjoyed more autonomy and flexibility in their work roles as compared to many other low income work roles. If so, these mothers may have been more similar to mothers of higher socio-economic means concerning their breastfeeding efforts.

Low income mothers in a previous study identified breastfeeding as a privilege of mothers with the economic means to stay at home (Guttman & Zimmerman 2000). In order to test this idea in this study the logistic regression model retained the nominal mother stays at home variable. The model did not find mothers who primarily stay at home with their babies to have increased odds of initiating breastfeeding. Many mothers in this sample did not initiate breastfeeding despite being primarily at home with their

babies. Other mothers who had paid employment did choose to breastfeed. Work appears to be a contributing constraint on breastfeeding choice but rarely the most definitive factor.

Mothers' postpartum break time and whether mother was primarily located at home were taken out of the linear regression models because they demonstrated multicollinearity with the time away for work variable. In preliminary models they were not significant predictors and only added 1.7% to the overall explanation of the model. To confirm whether postpartum break time had a relationship to breastfeeding duration, the bivariate correlation for working mothers ( $n = 69$ ) was checked. The correlation coefficient ( $r = .082, p = .504$ ) verified no significant correlation between these variables.

The impact of paid maternity leave time was also not explored in the regression models as only 8.6% ( $n = 12$ ) of study mothers reported having paid maternity leave. However, the finding that 91.4% of a low income sample of mothers had no paid maternity leave is important in itself. The 1993 *Family and Medical Leave Act* (FMLA) allows for 3 months of unpaid, job protected leave (Galtry & Callister, 2005). The FMLA applies only to workers who are employed by a company with 50 or more employees, work 20 or more hours a week, and have been at their positions for at least one year (Grant, 1995; Zinn, 2000). Paid leave is only available to a mother if she has otherwise earned the paid sick and/or vacation time. As can be seen in this sample, the FMLA doesn't go very far towards covering the needs of many low income mothers. It was suspected that economic need would drive mothers back to work before three months if they were actually lucky enough to work in an FMLA covered position. However, working mothers in this sample actually returned to work within a mean of 16 weeks from their babies' birth. As the mean

length of breastfeeding duration was only 10.9 weeks for breastfeeding workers many mothers weaned a full month before returning to work. This suggests that other issues with their breastfeeding experiences were more salient in their decisions to cease breastfeeding than a planned return to work. The study did not provide data on how mothers supported themselves and their children during these breaks from work. This is an area for future investigation.

### Synthesis on Demographic Findings

This study was implemented with a low income sample due to the consistency with which low income groups have been found to demonstrate lower breastfeeding rates (Abbott Labs, 2003; Li, et al, 2005, Wolf, 2003). By definition, mothers eligible for WIC services have incomes at or below 185% of the U.S. standard of poverty (Besharov & Germanis, 1999). The sample was 49.3% White, 32.2% African American, 18.5% Hispanic and other ethnicities. Age, education level, race/ethnicity, and marital status were variables considered in the multivariate regressions.

As discussed in relation to the work and social support findings, personal encouragement from a partner or primary support person was a significant predictor of breastfeeding duration when all mothers were considered in linear regression model 1. Being either married or partnered rather than in a single status became a significant predictor of breastfeeding duration for mothers who initiated breastfeeding in linear regression model 2. Other studies have found intimate partner's support for breastfeeding to influence mothers' feeding choices (Bar-Yam & Darby, 1997; Buckner & Matsubara, 1993; Giugliani, et al.,1994; Libbus & Kolostov, 1994; Matich & Sims, 1992; Rempel &

Rempel, 2004; Sullivan, Leathers, and Kelley, 2004). A baby's father can offer support with domestic chores as well as emotional support to a breastfeeding mother. Financial support from an involved father for the family unit may also allow mothers more time and flexibility for establishing breastfeeding before income earning is an absolute survival necessity. It is unclear in this study exactly which of these possibilities may be operating for mothers in this sample. Further research is needed to clarify impacts.

Educational level was a significant predictor of both odds of breastfeeding initiation in the logistic regression model and of breastfeeding duration in the linear regression models. The finding that higher education level was associated with the implementation of breastfeeding echoes other breastfeeding research (Abbott Labs, 2003; Li, et al, 2002, Li, et al, 2003; Li, et al, 2005). It also may fit with implications emerging from the qualitative data showing that many mothers find breastfeeding more difficult to implement than formula feeding, and that physical problems with a breastfeeding attempt often reflect poor breastfeeding knowledge and technique.

Exactly why higher educational level is a significant predictor of both breastfeeding initiation and breastfeeding duration is unclear. A higher education level does not necessarily mean a mother has more breastfeeding knowledge. It may be that she is more likely to seek information through books, inter-net resources, and professional assistance to help with an encountered breastfeeding problem. Possibly, education level proxies for social class impacts as well. More educated mothers may be more likely to implement breastfeeding because of internalized middle class values about what "good mothers" do (Abramovitz, 1988; Longres, 2000; Wall, 2001). Again, as with the group of mothers who

combined breastfeeding and work, there is a suggestion that relatively more privileged mothers within the sample experienced more success with breastfeeding.

### Summary of Findings

In summary, this study found that social and professional support, discomfort with public breastfeeding, time spent away from baby for work, not being married or partnered, and possessing a lower level of education did constrain the initiation and/or duration of breastfeeding for this low income sample of mothers. Reflecting on the findings has surfaced other more tentative implications.

1. Most mothers in the sample did not achieve the ideal AAP (1997; 2005) recommendations for breastfeeding exclusively to 6 months with continuation of some breastfeeding to one year and beyond.
2. Not all mothers in this sample wanted to breastfeed. However, some mothers who did wish to breastfeed were unsuccessful.
3. Initiating breastfeeding is more difficult for many mothers than formula feeding.
4. Many mothers were aware that “breastfeeding is best” when it didn’t work out for them, they suffered strong disappointment. Some sample mothers felt cheated.
5. The kinds of problems mothers experienced with breastfeeding attempts suggest that many mothers do not have adequate breastfeeding knowledge, technique, and assistance.

6. There are perception gaps between mothers and breastfeeding advocates regarding the importance of breastfeeding, and whether a breastfeeding problem can be solved.
7. Professional helpers give powerful advice. Some mothers received breastfeeding advice contrary to best breastfeeding practices, indicating a need for further breastfeeding education for professional helpers. Some professionals see breastfeeding as an ideal unattainable for all mothers with formula feeding seen as a very acceptable alternative.
8. Social desirability may have biased some mothers' answers, and cloaked some of the strength of anti-breastfeeding feelings.

### Limitations of the Study

Although this study has yielded valuable findings concerning constraints on breastfeeding choices for low income mothers, limitations to the study need consideration. The sample was selected using a random process (multi-stage cluster sampling). Quantitative results should therefore be generalizable to the population of the sampling frame. This frame was a geographically central region of Virginia including the WIC health districts of Central Shenandoah, Rappahannock-Rapidan, Thomas Jefferson, Henrico, and Richmond. The qualitative results add description of mothers' viewpoints to the study but they are not to be considered as statistically generalizable to all mothers in the study population.

Sample size is also a limitation in this study. A larger number of mothers in the study would have given all the multivariate analyses more power. The added power would have

made the analyses more sensitive to detecting even small impacts of independent variables. Lack of sufficient power prevented the full investigation of study variables on exclusive breastfeeding duration for mothers in this study.

Lack of a Spanish translation for the study instrument led to a selection bias in the study. Through the process described more fully in chapter four the solely Spanish speaking segment of the study population was systematically excluded from selection. A portion of Spanish speaking mothers did complete surveys. However, some of these questionnaires were less complete. Because the validity of answers to the sexual perception of breastfeeding scale seemed particularly language and culture dependent, most of the Hispanic cases and a few additional surveys from other cultural group immigrants were not used in the factor analysis of the sexual perception of breastfeeding scale. These cases then did not have complete variables to be included in the multivariate regression analyses. Therefore, the resulting data used in the quantitative analyses reflected the White and African American mothers selected in the sample but was non-representative of the broader cultural diversity of the study population.

This selection bias in the study may have impacted some variables more than others. Total number of breastfeeding role models was significant in the logistic model but not the linear regression models. Possibly this variable would have had greater impact if the Hispanic and other cultural immigrant's cases had been usable. These mothers tended to have the highest number of family and friend breastfeeding role models and as a combined group had the highest rate of breastfeeding initiation in the sample. Education level was found to be significant in all the regression models. The impact of educational level on the initiation and duration of breastfeeding for Hispanic and other immigrant mothers may not be as strong as it is for white and African American mothers. Many of the Hispanic and other cultural

immigrant mothers have less opportunity for education in their home countries yet still retain a strong cultural tradition of breastfeeding (Kimbrow, Lynch, McLanahan, 2004; Pinkerton & Pribble, 2003).

The factoring and validation of the sexual perceptions of breastfeeding scale was a primary contribution of this study. It would be valuable to know if sexual perceptions of breastfeeding differentially impact breastfeeding rates of different cultural groups, this study yields only limited information on this question. It is probable that the impacts are quite different as sexual perception may be a culturally relative concept. One study mother's view illustrates this. While completing an interview with this African immigrant mother, in spite of her very fluent English, she could not easily respond to the sexual perception of breastfeeding scale questions. She kept asking for clarification on each item. Finally, she said:

“In Africa this doesn't make sense. It's okay to feed. It's baby's business. If your baby needs milk you give it anywhere. You cover your body but don't worry about your breasts.”

This study framed sexual perception of breastfeeding as a breastfeeding constraint. But that frame may not be an accurate one for many persons. Breasts may be considered both sexual and nurturing, rather than dualistically either sexual or nurturing. Cultural learning may influence what is perceived as sexual. U.S. society might be characterized as almost puritanical about women's breasts' association with sexuality (Blum, 1999; Palmer, 1995). Other cultural groups' sexual concerns may be quite different. For instance, in cultural groups that have retained a tradition of breastfeeding, women have expressed concern with breastfeeding ruining the shape of the breasts as well as concern with breastfeeding making them too skinny (Blum, 1999). Further development of the cultural validity of the Sexual Perceptions of Breastfeeding scale is needed. Development of a Spanish version would help

explore the impact of sexual perceptions of breastfeeding among Hispanic mothers. Validation of the scale with other cultural immigrant groups would require a sample with adequate numbers of such mothers.

### A Special Case for Social Work

Although social workers occupy many roles impacting families with young children, little attention has been paid to breastfeeding within contemporary social work. If breastfeeding rates continue to increase in response to increased public health efforts, how social workers seek to assist all mothers' with breastfeeding efforts may become a more frequent question.

The experience of one particular mother in this study brings up unresolved dilemmas regarding breastfeeding for infants who must be separated from birth mothers and placed in foster care. This mother was selected at one of the sites, and at first I thought I would exclude her from the study because she was a foster mother. However, she was willing to be interviewed. On further reflection, I decided in the interest of maximum variability of experience, her baby feeding choices were quite pertinent to the study. This mother was white, married, and college educated. Because she was aware of the health benefits, she had wanted to obtain breast milk for her foster baby. Here are the complete expanded field notes concerning her story.

This foster mother to a young infant (6 weeks old at time of placement) attempted to find all the information she could about obtaining breast milk for the baby in the two weeks between accepting the placement and the baby's actual placement. She spoke with her pediatrician, a friend,

her sister, and did extensive internet research using the Google search engine and the query “foster children and breast milk”.

She said “I found out there are basically 3 ways to induce lactation: with drugs, using a breast pump, or with the baby. I felt like I didn’t have time to prepare adequately for induced lactation because there was only 2 weeks between the time we found out about him and when we accepted him. I’ll be candid, I felt funny about whether I wanted to. I’m a large chested woman and the idea of increasing my breast size was not attractive to me. But once I thought about it more and got more information I decided I could, but then I ran into all these obstacles.”

She did make a brief attempt to breastfeed the infant. She said “I did try skin to skin contact, for bonding. He was 6 weeks old by this time and doing well on the formula the temporary foster mother had started him on. He wasn’t interested in latching on when the nipple was offered. He didn’t know what to do.”

She tried to obtain breast milk for the infant through a milk bank, using the internet for information, as well as her pediatrician. “I was totally flummoxed that the milk bank required a prescription for breast milk. Like isn’t that weird? What could anyone do with breast milk that isn’t on the up and up? You can’t boil it down for drugs! I guess it is because it is a way of limiting who requests it since milk banks need more donors.” Her pediatrician was sympathetic but “wasn’t aware of anyone locally who had used banked milk.”

She had an offer of donated breast milk from a friend. Ultimately, however, they decided they didn’t want to use the friend’s milk since she was on an antidepressant medication “and it isn’t clear yet what impact this medication may have in breast milk.” And her foster infant “already had had too much drug exposure in his beginning.” When asked if she had looked for other donors, she said she had discussed it with her sister. But her sister lived in a distant state “and we would have had to send the milk on dry ice or something.”

“The other obstacle was the possible paperwork. You know, Google is great, using the query foster children and breast milk, I read story after story of paperwork nightmares of foster mothers obtaining permission to use

breast milk for foster children.” When asked if she had gone so far as talking to her foster infant’s social worker, she said she had not brought this up with her. “I did talk to his temporary foster mother and she said she had thought about trying breastfeeding too, but had not.”

In reflecting on her experience, she said “you know social services gets a bad rap from people and I don’t like to complain. Overall, I have had such a positive experience. I know that I am different from a lot of the people I was in the training group with, more educated and with more income. But there might be other people interested in breastfeeding too. There should be some attempt made in some way, to discuss these nutritional choices with foster parents waiting for infants. Like someone should ask them, have you thought about nutrition for the baby? Would you like information about inducing lactation or milk banks serving the area? Who needs breast milk more than a baby who has had a rough start?”

As this case and others she referred to from her on-line searching show, society’s growing acknowledgement that breast milk is the best food for human babies (Lawrence, 1997; 2000) means that breast milk is being considered even for infants separated from their birth mothers. Perhaps, as this mother suggests, breast milk should be especially sought for these more at-risk infants. In order to serve more needy infants, human milk banking programs need improvement (Geraghty, et. al, 2005). If the social will was present to improve these programs it seems much more could be done. If even a small fraction of the thousands of mothers participating in La Leche League International were given a way to make milk donations, perhaps with screening and facilities similar to current blood donation programs, milk supply in human milk banks would increase.

Some foster mothers *are* interested in breastfeeding their foster babies (Gribble, 2005; Piatek, 2000). The prospect of doing so brings up difficult questions. Discomfort

and controversy over the possibility of foster breastfeeding may be rooted in the view of breastfeeding as a sexual behavior. Child welfare social work concerns with foster breastfeeding may include: 1) concern that foster breastfeeding is somehow strange or perverted, 2) concern that foster breastfeeding would interfere with the bond between the child and the birth mother, and 3) concern that foster breastfeeding represents a hidden agenda to adopt the child (Piatek, 2002). The details of establishing screening standards, informed consent from birth parents, and health screening regulations are enormous (Wight, 2002). The possibility that unsanctioned foster breastfeeding may be in some cases occurring is also troubling. To coordinate services in the best interests of the children, the psychosocial needs of the babies, the foster mothers, and birth parents all need social work attention. Further research on foster breastfeeding is very much needed.

### Implications for Social Work Practice

Social workers can partner with other professionals in supporting breastfeeding. No woman should be bullied to breastfeed. Yet, women deserve the respect of receiving best practice information. Substantial scientific knowledge backs the health advantages of breastfeeding for both babies (Lawrence, 1997; 2000) and mothers (Labbok, 1999; 2001). The majority of mothers are physically able to breastfeed if they have access to knowledgeable support (Newman & Pittman, 2000). This study demonstrates that many times this is lacking.

Social workers who work with new mothers should become aware of resources in their community for breastfeeding consultation. Most hospitals and many doctors' offices

now have lactation consultants available to help patients solve breastfeeding dilemmas. La Leche League continues as the preeminent breastfeeding self-help group. They offer knowledgeable, free phone counseling and support group meetings in most communities. Breastfeeding peer counseling programs that provide mother to mother phone and/or home visit support have the most research validated efficacy for increasing breastfeeding among low-income women (DHHS, 2000). Social workers should refer to such programs when they are available. Additionally, the WIC program can provide food assistance and varying amounts of breastfeeding counseling to eligible low income mothers.

Social work clinical interventions during the childbearing cycle offer opportunity for individualized support. The social worker can inquire what a pregnant client has learned about breastfeeding and tailor information and referrals to her needs. Concerns and subjective meaning a woman attaches to her experiences need discussion. Pregnancy, birth, and breastfeeding can accelerate positive possibilities for personal change and empowerment. Meeting the physical challenges of these experiences adds incentive for many women to improve their nutrition, their sleep rhythms, and their personal relationships. Conversely, pregnancy, birth, and breastfeeding are also times of intense vulnerability for women. These powerful physiological female events, and the prescriptive expert advice that accompany them, may overwhelm a woman's sense of choice. Many mothers may feel guilt, grief, and loss when their experiences turn out to fall short of the ideal. Ultimately, it is most important to listen deeply to a woman's unique, unfolding experience of motherhood whatever infant feeding decisions she makes.

The Surgeon General's *Blueprint for Action on Breastfeeding* (2000) recommends that the health care community establish intervention programs and supportive networks promoting breastfeeding. Social workers are employed in early intervention and abuse prevention roles where breastfeeding support is especially needed. Social workers could partner with lactation consultants to bring psycho-social support groups to new mothers in underserved communities. Such groups could increase breastfeeding knowledge as well as counter loneliness and isolation for participants. Ripples of change could flow into communities from such groups empowering more women to believe that breastfeeding is possible and desirable.

Breastfeeding policy efforts need wider support. Breastfeeding legislation amending the Civil Rights and Pregnancy Discrimination acts to protect breastfeeding mothers in the workplace have been introduced in multiple congressional sessions without passage (Weimer, 2005; Maloney, 2007). This legislation would give employers incentives to provide breastfeeding workers breaks and privacy for pumping. Poor mothers are in need of other pro-breastfeeding policy supports that would address breastfeeding needs within welfare-work programs and expand FMLA coverage to more vulnerable workers.

Breastfeeding is a physiological behavior enacted within complex social, psychological, and cultural influences. U.S. breastfeeding rates will not easily meet Healthy People 2010 goals without help from many quarters. By incorporating awareness of the significance and challenge of breastfeeding social workers can take action to help in the public health effort to increase breastfeeding in the United States.

### A Situated, Reflexive, Embodied, & Relational Call to Action

My personal, positive experience of breastfeeding my three sons led to my scholarly interest in breastfeeding phenomena. My competence as a breastfeeding mother is a grounding for my knowledge building in this area. Socialist feminist theorist Dorothy Smith (1986; 1999) encourages scholars to be aware of their own *standpoint* in their thinking. She advocates that researchers strive to build knowledge that is situated, reflexive, embodied and relational. After several years of living as a breastfeeding mother I know both the delight and the exhaustion of the practice. This may sharpen my critical consciousness in some ways and make my perspective more specifically situated in others. After learning about 140 other mothers' accounts of their infant feeding choices, I remain impressed with how privileged my own experience has been.

As I have pondered the results of my study, I am struck with how much what we believe to be possible defines what we try for as individuals and as a society. Symbolic Interaction emphasizes the influence of reference groups and significant others' opinions as shaping the *Self's* choice of meaningful lines of action. My own breastfeeding options were thus assisted by a mother, sister, aunts, and grandmother who had, of course (!), breastfed and believed in breastfeeding. My grandmother, Sallye Rhodes Hurst Gross, advised her daughters to "nurse through the second winter" (Mary Louise Hurst Hostetter, personal communication, December 27, 2003). I believe that this gem of wisdom survived in my family's history as a legacy of my great-grandmother Lelia Keller Rhodes's work as a birth attendant and community helper in the first decades of the twentieth century. "Nursing through the second winter" echoes the breastfeeding promotion message given to

mothers during the “milk crusades” when health promoters sought to impact high infant mortality rates with the advice to “nurse through the second summer” (Wolf, 2003).

Historical family tradition was not my only reference as I made my own breastfeeding choices. Excellent assistance from a midwife helped me initiate breastfeeding within minutes of birth. I learned a unique connection with each one of my babies assisted as Bartlett (2002) suggests by the “operation of [my] own flesh, blood, cells, genes, and hormones” (p.374) in breastfeeding. My physiological process reinforced for me, again as Symbolic Interaction theorizes, that I was enacting the role of mother successfully. A network of other “attachment parenting” friends made breastfeeding and even extended breastfeeding seem normal. My standpoint reflects a values orientation that breastfeeding can be and even should be an integral and helpful part of early mothering. This study reflects that there are multiple other social standpoints on breastfeeding. A values perspective seems almost unavoidable as recommendations on breastfeeding for low income women are considered. Mothering, and how to do it well, is a value and culture laden domain. Infant feeding choices are intimate decisions with personal implications for every individual mother.

Foucault identified the concept of subjugated knowledge in his post-modern philosophical works on power and the body (Brown, 2000, Foucault, 1978; Foucault, 1980). Foucault defined subjugated knowledge as knowledges of a particular locality or common experience which are viewed as inadequate or nonscientific. Such knowledge persists despite its lack of acknowledgement. Knowledge of breastfeeding within U.S. culture persisted in the mid-twentieth century quietly guarded by the mostly unusual

women and families who persisted with breastfeeding when bottle feeding was considered the cultural norm. Foucault also referred to *bio-power* which he saw as the power that reaches into the grain of persons, into their bodies, and impacts their attitudes and actions (Brown, 2000).

The founding mothers of La Leche League can be seen as remarkable leaders in a bio-power movement over the last fifty-two years that successfully preserved a largely subjugated knowledge, and gradually made it more available for others. Starting with the breastfeeding passion of a group of seven women they built an effective and lasting self-help group (Bobel, 2001; Gorham & Kellner-Andrews, 1990; La Leche League International, 2007). Judged through feminist lenses their mother-child togetherness ethic and lack of assertive political action appear restrictive. The league didn't even openly support the 1980's boycott of the Nestle company for unethical formula marketing in developing countries (Blum, 1999). Some league mothers even set out to educate and show doctors what was possible with breastfeeding by becoming patients of doctors who were supplying women with particularly unhelpful breastfeeding advice (La Leche League International, 1987, p xii). Clearly, La Leche League has provided an alternative voice of breastfeeding expertise and a quietly subversive challenge to medical hegemony on breastfeeding practices. Many women have been assisted with breastfeeding when they would have given up otherwise. La Leche League is still probably a better choice for embodied wisdom on how to breastfeed than some pediatrician offices. La Leche League also has been successful at helping some doctors, who more frequently have been medical *men*, learn the womanly art of breastfeeding (Newman & Pittman, 2000; Wootan &

Verney, 1992). Thus, women's breastfeeding wisdom began infiltrating medical offices and the wider culture. However, as a mostly white, middle-class group they are less attractive to and therefore less helpful for low income mothers.

The call to establish more peer breastfeeding educator programs (Satcher, 2001) to assist low income mothers' breastfeeding is reminiscent of La Leche League's model of women helping women. This study joins a long line of evidence reinforcing the need for these peer educator programs (Arlotti, Cottrell, Lee, & Curtin, 1998; Caulfield, et al., 1998; Chapman, Damio, & Perez-Escamilla, 2004; Dennis, Hodnett, Gallop, & Chalmers, 2002; Ryser, 2004; Haider, Ashworth, Kabir, & Huttly, 2000; Kistin, Abramson, & Dublin, 1994; Long, Funk-Archuleta, Geiger, Mozar, & Heins, 1995; Mongeon & Allard, 1995; Morrow, et al., 1999; Pugh, Milligan, Frick, Spatz & Bronner, 2002; Schafer, Vogel, Viegas, & Hausafus, 1998; Shaw & Kaczorowski, 1999).

In order to transform society's breastfeeding attitudes further, action on behalf of breastfeeding needs to extend beyond the vision of La Leche League. Breastfeeding in a society that is theorized by socialist feminism as a capitalist patriarchy still presents structural walls to the practice of breastfeeding. The inappropriate marketing of formula remains a barrier to successful breastfeeding (Bentley, Dee, & Jensen, 2003; Howard, et al, 2000; Newman & Pittman, 2000). Formula and baby food companies are not neutral players in the effort to raise breastfeeding rates. They stand to lose money on every additional mother who learns that breastfeeding is possible and desirable. The formula companies exert influence on the American Academy of Pediatrics through contributions and have been successful at limiting anti-formula advertising (Peterson, 2003; ABC News,

2004). The tension between breastfeeding promotion efforts and formula marketing will continue. Advocates should not back down from efforts to advise mothers that breastfeeding is the most healthful way to feed a baby from one on one conversations to warning labels on formula cans.

Increasing breastfeeding in U.S. society has been touted as a way to save health care dollars (Porter, 2003; Smith & Ingham, 2005; Weimer, 2001; Weimer, 2003). However, it is rarely mentioned that the mostly economically invisible labor of breastfeeding costs mothers' time and physical energy (Smith & Ingham, 2005). It should be acknowledged that for women, breastfeeding is not free. Increases in breastfeeding rates *will* probably save society money. However, the savings will only be realized through the real work of mothers. Social policy that supports breastfeeding comprehensively may also cost money. The cost of breastfeeding for low income mothers is currently only supported in small ways. Low income breastfeeding mothers receive enhanced food packages in the WIC program in recognition of an increased need for healthy food while breastfeeding (Virginia Department of Health, 2002). Additional subsidy to low income breastfeeding mothers should be considered. A lactation increase in monthly food stamp allotments may be another small way to do this. Welfare work programs need to have flexible work options to make allowance for the needs of breastfeeding mothers (Haider, Jacknowitz, & Schoeni, 2003). A larger social investment in breastfeeding would include tax supported paid family leave for all mothers. Tax supported paid family leave for mothers seems an unrealistic possibility at present. Other developed countries like Canada and Sweden have this kind of leave; their breastfeeding

rates are higher as well (Galtry, 2003; Galtry & Callister, 2005). If tax supported paid leave cannot be made available to all mothers, recognition of the need for tax supported paid leave for low income mothers who currently receive little help through the Family and Medical Leave Act (U.S. Department of Labor, 2000) would be a first and logical step (Galtry & Callister, 2005).

There is little doubt that women's breasts will continue to be highly sexualized in this culture (Li, Fridinger, & Grummer-Strawn, 2002; Palmer, 1995, Stearns, 1999; Young, 1998). Instances of conflict over lack of tolerance for public breastfeeding hit the news periodically (Chong, 2004; Kang, 2006; Stuart, 2004). In November 2006, two weeks after a Delta Airline employee requested that a nursing mother and her family not proceed with their planned flight due to "offending" that employee through breastfeeding, the largest multiple site nurse-in protest ever occurred at 30 Delta Airline Ticket Counters throughout the country. This kind of mother power may be a harbinger of things to come. Perhaps, eventually there will be enough political constituency to enact more breastfeeding friendly social policies in the United States.

The suggestion that women should breastfeed and should be helped to do so may seem restrictive and moralistic to some (Wall, 2001). Foucault might call breastfeeding promotion an attempt at disciplinary power, an attempt to control, optimize, and perfect the functioning of individual bodies within the social body (O'Brien, 1999). Symbolic interactionists may leave the symbolic meaning making up to each individual mother who ultimately must choose what line of action she will take.

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## **APPENDIX A**

Recruitment Brochure

Your Rights as Research Participant

If you have questions or concerns about the study and your rights as a research participant, you may contact:

Ann Nichols-Casebolt, PhD  
(804) 828-0703

School of Social Work  
PO Box 842027

Virginia Commonwealth University

Richmond, VA 23284-2027

You may also contact:

Office of Research Subjects  
Protection

Virginia Commonwealth University

800 E. Leigh St, Suite 114

PO Box 980568

Richmond, VA 23298-0568

Or call

(804) 827-1735

Virginia Commonwealth University

IRB# HM10029

**Contacting the Researcher**

Do you have questions about joining the study? Feel free to contact the researcher, Carol Hurst, MSW, LCSW  
Phone: (434) 823-1533  
Email: [hurstcg@vcu.edu](mailto:hurstcg@vcu.edu)

By mail:

Carol Hurst

Doctoral Candidate

School of Social Work

PO Box 842027

Virginia Commonwealth University

Richmond, VA 23284-2027

Obtaining Study Results

If you want to know how the study turns out, let Carol know!

Do you want to

join the

Baby Feeding  
Choices Study?



Study Purpose

Researchers at Virginia Commonwealth University are interested in what is most important to mothers like you in deciding how to feed their babies.

What's Involved in the Study?

A researcher will interview you either in person or by phone, or send you a survey to complete. She will ask you questions about the choices you made regarding formula or breastfeeding, what you thought about as you made your choices, and what was hard and easy for you about your choices.

If you don't understand something you can ask (or call) the researcher for help.

How long does it take?

The researcher will schedule an interview time that will fit your schedule. She can talk to you at the WIC office or call you at home. The interview usually takes around 15 minutes.

Who can be in the study?

This study is open to mothers receiving WIC benefits who are at least 18 years old, and who have a baby between three and 18 months old.

Do I have to be in the study?

Your participation is completely voluntary. It won't affect your WIC benefits. You have the right to withdraw from the study at any time without penalty. Just tell the interviewer: "I don't want to keep doing this."

Risks

Some of the questions may feel very personal. But, your name won't be connected to your answers, so you can feel free to say what you really think!

Will anyone know if I am in the study?

Your name will only be used to contact you. It will not be shared with anyone else. People in the WIC office will not know if you are in the study. After your interview, your contact information will be destroyed.

Informed Consent

Giving informed consent means you freely join the study after learning about its purpose, and risks and benefits. Since this is an anonymous study, you show your consent by scheduling and completing an interview. Your name will not be kept.

What do I get if I am in the study?

In appreciation for your time, the researchers will give you a small gift or gift certificate at the end of your interview. It's yours to keep as a thank you.

What do I do to be in the Study?

Fill out your contact information on the attached form and give it to the researcher. If you want to think about it first, take this brochure home with you and call later at (434) 823-1533 to say you want to join. An interview will be scheduled within a week to 10 days.

## **APPENDIX B**

Contact Form

## Baby Feeding Choices Study Contact Form

\_\_\_\_\_ Yes! I am interested in joining the study.

**PLEASE PUT YOUR NAME AND CONTACT INFORMATION BELOW**

\_\_\_\_\_ No, I am not interested in joining the study. IF YOU ARE NOT INTERESTED IN JOINING THE STUDY YOU DO NOT NEED TO PUT YOUR NAME ON THIS FORM.

I understand my name and contact information will only be used to contact me for the study.

Name: \_\_\_\_\_

**Phone:** (    ) \_\_\_\_\_

best day to reach me: (circle any days that work)  
M, T, W, Th, F, S, Sun.

The best time to reach me: (circle any times that work)  
Morning, afternoon, evening.

My Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Thank you for your time and interest!



**APPENDIX C:**

Cover Letters



[Appropriate Date]

Dear mother:

I am writing to you from the Baby Feeding Choices study. Thank you for agreeing to participate in the study! The research is being conducted to better understand what is most important to mothers in making choices about how to feed their babies.

As was explained to you when I met you at the WIC office, your participation will not effect your WIC benefits in any way. Your participation in this research is completely voluntary. I hope you will enjoy the opportunity to contribute your opinions, but please do not feel like you have to. You have a right to freely withdraw from the study at any time.

Because this is a personal life area, some of the questions may feel very personal to you. Please be reassured that there is no one right answer to any of the questions. The study is interested in your experience with these matters and how you made your choices. You are receiving the mailed questionnaire instead of a telephone interview. It should take you about **15 minutes or less** to fill out the enclosed questions. Please send it back as soon as possible in the enclosed stamped, addressed envelope.

You may be assured of complete confidentiality. Your name and address has only been used to send this to you. You will notice that your questionnaire has a number. When your questionnaire is returned, I will know to send you your thank you gift by the number. After sending you your thank you gift, I will destroy your identifying information. It will not be kept with your answers. If I do not receive your numbered questionnaire within two weeks, I will send you a reminder letter. If I still do not hear from you, I will destroy the name and address I have for you.

If you would like more information about the study or have any questions, please feel free to contact me by e-mail [[carolhurst@cstone.net](mailto:carolhurst@cstone.net)] or by phone at 434 823-1533.

Thank you so much for your willingness to help with this study!

Sincerely,

Carol Grace Hurst, MSW, LCSW  
 Doctoral Candidate  
 School of Social Work  
 PO Box 842027  
 Virginia Commonwealth University  
 Richmond, VA 23284-2027

If you have questions about your rights as a  
 research participant, you may contact:  
 Office of Research Subjects Protection  
 Virginia Commonwealth University  
 800 E. Leigh St, Suite 114  
 P.O. Box 980568  
 Richmond, VA 23298-0568  
 Telephone Number: (804) 827-1735



[Appropriate Date]

Dear mother:

Hi again. I'm writing to you from the Baby Feeding Choices study. We appreciate so much that you said you were interested in participating in the study. I have either been unable to reach you by telephone or did not receive a returned survey in the mail.

Enclosed you will find another copy of the survey with a return envelope. We would love to give you another chance to respond because our results will be more accurate with more mothers participating. As was explained earlier, your participation will not effect your WIC benefits in any way. I hope you will enjoy the opportunity to give your opinions, but please do not feel like you have to.

Because this is a personal life area, some of the questions may feel very personal to you. Please be reassured that there is no one right answer to any of the questions. The study is interested in your experience with these matters and how you made your choices. You are receiving a mailed questionnaire instead of a telephone interview. It should take you about **15 minutes or less** to fill out the enclosed questions. Please send it back as soon as possible in the enclosed stamped, addressed envelope.

You may be assured of complete confidentiality. Your name and address has only been used to send this to you. You will notice that your questionnaire has a number. When your questionnaire is returned, I will know to send you your thank you gift by the number. After sending you your gift, I will destroy your identifying information. It will not be kept with your answers. If I do not receive your numbered questionnaire within two weeks, I will destroy the name and address I have for you.

If you would like more information about the study or have any questions, please feel free to contact me by e-mail [carolhurst@cstone.net] or by phone at 434 823-1533.

Thank you so much!

Sincerely,

Carol Grace Hurst, MSW, LCSW  
 Doctoral Candidate  
 School of Social Work  
 PO Box 842027  
 Virginia Commonwealth University  
 Richmond, VA 23284-2027

If you have questions about your rights as a  
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 Richmond, VA 23298-0568  
 Telephone Number: (804) 827-1735

**APPENDIX D:**

Study Questionnaire



### Baby Feeding Choices Survey

Please answer the following questions about yourself, your children, and your experiences.

1. How many children do you have? \_\_\_\_ (fill in #) Please list first names and ages of children.  
 Name \_\_\_\_\_ age \_\_\_\_\_    Name \_\_\_\_\_ age \_\_\_\_\_    Name \_\_\_\_\_ age \_\_\_\_\_  
 Name \_\_\_\_\_ age \_\_\_\_\_    Name \_\_\_\_\_ age \_\_\_\_\_    Name \_\_\_\_\_ age \_\_\_\_\_
2. How old is your youngest baby? \_\_\_\_ weeks \_\_\_\_ months \_\_\_\_ years  
 Is your youngest baby a twin? (fill in) \_\_\_\_ singleton \_\_\_\_ twin \_\_\_\_ triplet \_\_\_\_ other
3. Where did you give birth to your youngest baby? (choose only one)  
 \_\_\_\_ hospital (which one? \_\_\_\_\_) \_\_\_\_ other (fill in \_\_\_\_\_)
4. How much did your youngest baby weigh at birth? \_\_\_\_ pounds \_\_\_\_ ounces  
 Did you have a C-section? (choose only one) \_\_\_\_ no \_\_\_\_ yes  
 Did you experience any other health problems? \_\_\_\_ no \_\_\_\_ yes (name \_\_\_\_\_)  
 Did your baby experience health problems following the birth? \_\_\_\_ no \_\_\_\_ yes  
 (If yes, please describe briefly \_\_\_\_\_)
5. Did you get a formula gift after your baby's birth? \_\_\_\_ no \_\_\_\_ yes (if yes, what kind \_\_\_\_\_)  
 How did you get your gift? \_\_\_\_ through the hospital \_\_\_\_ by mail \_\_\_\_ other (\_\_\_\_\_)  
 Did you use the gift formula? \_\_\_\_ no \_\_\_\_ yes  
 Did you keep on using this brand of formula after the gift was used up? \_\_\_\_ no \_\_\_\_ yes
6. Have you ever breastfed your youngest baby? (choose only one) \_\_\_\_ no \_\_\_\_ yes
7. If you did (or still are), how long did you breastfeed? \_\_\_\_ days \_\_\_\_ weeks \_\_\_\_ months  
 How long did you breastfeed exclusively (feeding only breastmilk, water, and prescribed vitamins but no supplemental formula or other food) \_\_\_\_ days \_\_\_\_ weeks \_\_\_\_ months
8. If you have older children and breastfed them, indicate approximately how long below.  
 1<sup>st</sup> child? \_\_\_\_ breastfed \_\_\_\_ days \_\_\_\_ weeks \_\_\_\_ months Exclusively? \_\_\_\_ days \_\_\_\_ weeks \_\_\_\_ months  
 2<sup>nd</sup> child? \_\_\_\_ breastfed \_\_\_\_ days \_\_\_\_ weeks \_\_\_\_ months Exclusively? \_\_\_\_ days \_\_\_\_ weeks \_\_\_\_ months  
 3<sup>rd</sup> child? \_\_\_\_ breastfed \_\_\_\_ days \_\_\_\_ weeks \_\_\_\_ months Exclusively? \_\_\_\_ days \_\_\_\_ weeks \_\_\_\_ months  
 4<sup>th</sup> child? \_\_\_\_ breastfed \_\_\_\_ days \_\_\_\_ weeks \_\_\_\_ months Exclusively? \_\_\_\_ days \_\_\_\_ weeks \_\_\_\_ months
9. If you have older children and used formula indicate kinds used \_\_\_\_\_

Did you use? (please circle) used only formula / used formula and breastmilk

10. How do you currently feed your youngest baby? (choose only one)
- ☐ only breastfeed
 ☐ breastfeed with some solid food  
☐ only formula feed
 ☐ formula feed with some solid food  
☐ combine breastfeeding and formula feeding
 ☐ other (fill in \_\_\_\_\_)
11. If you use formula, what kind is it? \_\_\_\_\_ Did receiving formula through the WIC program influence your feeding choice? ☐ no ☐ yes How? \_\_\_\_\_
12. What are (were) your main reasons for breastfeeding? \_\_\_\_\_
- \_\_\_\_\_  
 What are (were) your main reasons for formula feeding? \_\_\_\_\_  
 \_\_\_\_\_
13. How was your experience with your feeding choice?(did you like/dislike it? Any special problems?) \_\_\_\_\_
14. Who did you go to for help with any feeding problems? (regarding formula or breast-feeding) (mark any that may apply)
- ☐ doctor
 ☐ nurse
 ☐ WIC
 ☐ my mother
 ☐ a friend
 ☐ no one  
☐ lactation consultant
 ☐ La Leche League
 ☐ other (fill in \_\_\_\_\_)
- What advice did you get? \_\_\_\_\_
- \_\_\_\_\_  
 What happened? \_\_\_\_\_
15. How old are you? \_\_\_\_\_ years
16. How do you identify yourself? (choose only one)
- ☐ White
 ☐ Hispanic (country of origin \_\_\_\_\_)  
☐ Black
 ☐ Native American  
☐ Bi-racial
 ☐ Other (fill in \_\_\_\_\_)  
☐ Asian
17. Are you? (choose only one)
- ☐ never married
 ☐ divorced  
☐ married
 ☐ widowed  
☐ separated
 ☐ other (fill in \_\_\_\_\_)
18. What is your living situation? (choose only one)
- ☐ live singly (with children)
 ☐ live with husband/partner  
☐ live with parents
 ☐ Other (fill in \_\_\_\_\_)

19. How much education do you have? Total years? \_\_\_\_\_ (choose only one below)
- |                          |                                     |
|--------------------------|-------------------------------------|
| ____grade school         | ____some college                    |
| ____some high school     | ____college graduate                |
| ____high school graduate | ____some graduate school            |
| ____trade school         | ____advanced or professional degree |
20. Are you currently in school? \_\_\_\_no \_\_\_\_yes  
 If yes, how many hours do you spend at school every **week**? \_\_\_\_hours  
 On a typical school **day**, how many hours do you spend away from your baby? \_\_\_\_
21. Other than mothering, do you also currently have a job (for income)? \_\_\_\_no \_\_\_\_yes  
 What is your job? \_\_\_\_\_ (waitress, fast food, factory, secretary, etc.)  
 How many hours do you spend at your job in a typical **week**? \_\_\_\_hours  
 On a typical work **day**, how many hours do you spend away from your baby? \_\_\_\_
22. How many weeks did you stay at home with your baby (maternity leave) before returning to a regular work or school schedule? \_\_\_\_weeks\_\_\_\_ Did not return to job  
 \_\_\_\_ work at home  
 Did you have paid time off? \_\_\_\_ no \_\_\_\_yes How much? \_\_\_\_weeks \_\_\_\_months
23. Did you try to continue breastfeeding after your return to work (or school)? \_\_\_\_no\_\_\_\_yes  
 If you did, please answer questions 24-30. If no, skip to number 31.
24. How long did you continue breastfeeding after your return? \_\_\_\_weeks \_\_\_\_months
25. What was your baby fed while you were at work (or school)? (mark all that applies)
- |   |
|---|
| ____pumped breastmilk (circle amount 25%, 50%, 75%, 100% of baby's total food)  |
| ____supplemental formula (circle amount 25%, 50%, 75%, 100% of total food)      |
| ____supplemental foods (circle amount 25%, 50%, 75%, 100% of baby's total food) |
26. Did you pump milk while at work (or school)? \_\_\_\_yes \_\_\_\_no If yes, approximately how long did it take you? \_\_\_\_minutes How many times per day? \_\_\_\_  
 Where did you find space to pump? \_\_\_\_\_
27. Did you feel support from your co-workers for your continued breastfeeding? (circle)  
 Not at all    Very little    Some    A lot    Very Strong    N/A
28. Did you feel support from your supervisor for your continued breastfeeding?(circle)  
 Not at all    Very little    Some    A lot    Very Strong    N/A
29. What was your experience with your milk supply as you continued working and breastfeeding?(Did you have enough?)\_\_\_\_\_
30. Is there anything else you would like to say about your experience with breastfeeding and work?\_\_\_\_\_

31. Who is your most important support person? (Partner, My Mother, friend, \_\_\_\_\_other)

32. What kind of help does this support person give you? (check any that may apply)

☐ financial support    ☐ baby sits    ☐ makes meals  
☐ emotional support    ☐ changes baby's diaper    ☐ washes dirty dishes  
☐ plays with baby    ☐ comforts crying baby    ☐ cleans house  
☐ bathes baby    ☐ helps at night with baby    ☐ does laundry

33. Does this person prefer that you use ☐ formula or ☐ breastfeed? Explain \_\_\_\_\_

34. How much did this person encourage you in the way you chose to feed your baby?

Not at all      Very little      Some      A lot      Very Strong      N/A

35. Has anyone in your family breastfed her baby? (mark all that apply)

☐ No one    ☐ my partner's mother    ☐ aunt  
☐ my mother    ☐ my grandmother    ☐ cousin  
☐ my sister    ☐ sister-in-law    ☐ other relative

36. Have any of your friends breastfed their babies? ☐ yes ☐ no

If yes, how many? \_\_\_\_\_(fill in number)

37. Of the options below, who has been your most important professional support person?

☐ doctor    ☐ nurse    ☐ WIC    ☐ lactation consultant    ☐ no one  
☐ La Leche League    ☐ other (fill in \_\_\_\_\_)

38. How much did this person encourage you in the way you chose to feed your baby?

Not at all      Very little      Some      A lot      Very Strong      N/A

39. How did this person encourage you? \_\_\_\_\_

40. Has anyone discouraged you in the way you chose to feed your baby? ☐ no ☐ yes

(discouraged means suggested you stop or change your choice)

41. What relationship did this person have to you? \_\_\_\_\_

42. How much did this person discourage you in the way you chose to feed your baby?

Not at all      Very little      Some      A lot      Very Strong      N/A

43. How were you discouraged? \_\_\_\_\_

The next section of the survey asks about your opinion about benefits and drawbacks of formula feeding and breastfeeding. There are no right or wrong answers! Please say what you really think. Please check formula feeding or breastfeeding as best for each reason according to your opinion.

	The feeding approach that:	Formula feeding	Breastfeeding
44.	is <i>most convenient</i> for me?		
45.	is <i>most difficult to learn</i> ?		
46.	best allows others to help the mother take care of the baby?		
47.	costs me <i>more money</i> ?		
48.	is <i>most helpful</i> for protecting baby from disease?		
49.	is <i>most helpful</i> for baby's brain development?		
50.	has the <i>most health benefits</i> for the <i>mother</i> ?		
51.	is <i>most helpful</i> for bonding with baby?		
52.	is the <i>traditional</i> feeding choice in my family?		
53.	is the <i>most difficult</i> to combine with a job?		

54. Of the above reasons (questions 44-53), what was most important to you when you were making your baby feeding decision? \_\_\_\_\_



The last section of the survey asks how you feel about different parts of breastfeeding a child. There is no "right" or "wrong" answer. Some people think and feel one way, others think and feel another way. Please choose from the following options to show how you feel about each statement. Put the matching number to your response in front of each statement.

- 1 = strongly agree
- 2 = moderately agree
- 3 = neutral
- 4 = moderately disagree
- 5 = strongly disagree

- \_\_\_\_ 55. Breastfeeding seems like a natural thing to do.
- \_\_\_\_ 56. I think most people are uncomfortable if a mother nurses her baby in public.
- \_\_\_\_ 57. It would embarrass me to nurse at a restaurant table.
- \_\_\_\_ 58. Most men think their partner's breasts are for them.
- \_\_\_\_ 59. It's okay for kids to see nursing so they learn another idea for feeding babies.
- \_\_\_\_ 60. I think most people can get used to being around breastfeeding fairly easily.
- \_\_\_\_ 61. A lot of people I know see breastfeeding as disgusting.

- \_\_\_ 62. You should be careful about breastfeeding in front of older children so they don't get the wrong idea.
- \_\_\_ 63. When I see mothers nursing their babies, I feel comfortable with it.
- \_\_\_ 64. Breasts just seem sexual to me.
- \_\_\_ 65. If a mom isn't real careful about how she lifts her shirt to nurse and her breast shows, it is no big deal.
- \_\_\_ 66. It's really better to leave formula with your child care person because a breast milk bottle is so personal.
- \_\_\_ 67. I'm more comfortable with breastfeeding than my mother was.
- \_\_\_ 68. Breastfeeding interferes with sex too much.
- \_\_\_ 69. Breastfeeding ruins the shape of the breasts.
- \_\_\_ 70. Some babies are too old to be nursed.
- \_\_\_ 71. It's perverted if it feels good to a mother when she breastfeeds.
- \_\_\_ 72. It probably turns men on to see a woman nursing.
- \_\_\_ 73. The main purpose of breasts is to produce milk.
- \_\_\_ 74. If a woman's partner doesn't like her breasts being used by the baby, she shouldn't breastfeed.
- \_\_\_ 75. If a mother is still nursing her two year old it's probably for her own sexual needs.
- \_\_\_ 76. Its their problem if some people don't like to see a mother nursing.
- \_\_\_ 77. A mother who makes the choice to breastfeed shouldn't have to hide it.
- \_\_\_ 78. The risk of breast milk leaking and other people noticing is too embarrassing for me.
- \_\_\_ 79. A mother needs a lot of confidence in her body to nurse.
- \_\_\_ 80. I'd be embarrassed to store pumped breast milk in a refrigerator at work where others could figure out what it is.
- \_\_\_ 81. Feeling comfortable with your breasts helps if you are going to breastfeed.

**You have reached the end of the survey!! Thank you so much for completing it. Please put the survey in the stamped, addressed envelope and send back to the researchers. Your thank you gift will be mailed to you and your contact information will not be kept.**

## **Vita**

Carol Grace Hurst was born in May 1964 in Philadelphia, Pennsylvania. She grew up in Harrisonburg, Virginia. She earned her Bachelor of Arts Degree in Sociology with minors in English and Journalism from Eastern Mennonite University in 1986. She obtained her Master of Social Work Degree from Virginia Commonwealth University in 1990. She practiced as a social worker in community mental health and family practice settings from 1990-2000, specializing in working with children, youth, and families, obtaining her Virginia license as a clinical social worker in 1993. Since 1993, Ms. Hurst has worked in several settings providing clinical supervision of clinical work with children, youth, and families for masters' level trainee candidates for state licensure. While completing her doctoral study, Ms. Hurst was awarded a 2002 Virginia Commonwealth University Graduate Studies Jessie Hibbs scholarship, an award competitively awarded to a promising woman scholar with children. Her dissertation research was supported by a Virginia Organization of Health Care Social Workers doctoral dissertation scholarship in 2005 as well as a V.C.U. Graduate Studies Dissertation Scholarship in 2007. During the pursuit of her doctoral degree, she taught Human Behavior and Social Environment Courses and was a faculty field liaison for students in field placement in the bachelor and master of social work programs at Virginia Commonwealth University. Ms. Hurst resides near Charlottesville, Virginia with her husband and three sons.